The role of self-compassion in adjustment following myocardial infarction

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Katherine A. Pearson

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MAIN RESEARCH PROJECT

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Katherine A. Pearson

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ABSTRACT

Background: The thesis investigated the role of self-compassion, defined as "being open to and moved by one's own suffering, experiencing feelings of caring and kindness toward one-self, taking an understanding, non-judgmental attitude toward one's own inadequacies and failures and recognising that one's experience is part of the common human experience" (Neff, 2003b, p. 244) in adjustment following MI. Adjustment was defined in terms of emotional, cognitive and behavioural response to MI. Previous empirical findings indicate that self-compassion confers resilience dealing with adversity (Leary, Tate, Adams, Batts Allen, & Hancock, 2007; Neff, Hsieh, & Dejitterat, 2005; Neff, Kirkpatrick, & Rude, 2007), and it has recently been hypothesised that self-compassion may be an important mechanism influencing response to health events (Terry & Leary, 2011).

Method: The study sample comprised adults referred to an urban Cardiac Rehabilitation Service following MI (N= 87). Participants completed a battery of self-report questionnaires which assessed self-compassion (Self-compassion scale, SCS, Neff, 2003a), anxiety and depression (Hospital Anxiety and Depression Scale, HADS, Zigmond & Snaith, 1983) , illness perceptions (Brief Illness Perception Questionnaire, Brief-IPQ, Broadbent, Petrie, Main, & Weinman, 2006) and cardiac symptoms (Ketterer et al., 2008). Cardiac function post MI was assessed using a measure of left ventricular ejection fraction (LVEF). Attendance at cardiac rehabilitation (decision to opt in or out) was used as an index of behavioural adjustment.

Results: As predicted, higher levels of self-compassion were associated with lower levels of anxiety (p =.001), depression (p =.01), and a reduced tendency to perceive that MI is having a negative emotional impact (p<.01), after statistically controlling for cardiac symptoms. Cardiac function was not associated with emotional adjustment following MI. Self-compassion was not associated with beliefs related to the cognitive representation of cardiac illness, after controlling for other factors. Self-compassion was not statistically significantly associated with an increased tendency to opt in to cardiac rehabilitation.

Discussion: The results provide preliminary evidence which indicates that the "buffering effect" of self-compassion (observed previously in response to academic

and interpersonal stressors) is also observed responding to MI (i.e. a life threatening health event). More specifically, self-compassion is associated with a reduced negative emotional impact of MI but was not associated with the cognitive representation of cardiac illness. The potential effect of self compassion upon the moment to moment processing of cardiac stimuli and adjustment to MI over time are discussed.

CHAPTER 1: INTRODUCTION

Literature Review

The starting point for the thesis was an interest in whether the "buffering effect" of self-compassion, previously observed inrelation to academic and interpersonal stressors, is replicated in the context of a serious coronary health event, myocardial infarction (MI). The chapter starts by providing a definition of Coronary Heart Disease (CHD) and MI, a global public health concern. As a starting point for theorising the role of self-compassion in adjustment to MI, the literature which underpins current understanding of adjustment to MI is reviewed, focusing on two key indicators of poor emotional adjustment; depression and anxiety. A provisional bio-psycho-social model of adjustment is proposed. The review concludes with an overview of the current self-compassion literature, including a review of recent studies which have started to investigate the role of self-compassion in physical health.

1.1 Coronary Heart Disease (CHD) and Myocardial Infarction (MI)

CHD is a term used to describe cardiac events or symptoms which are related to myocardial ischemia and/or injury, primarily due to atherosclerosis (Azambuja & Levins, 2007). Manifestations of CHD include myocardial infarction (MI, the focus of this thesis), angina, and heart failure. CHD is the fourth highest cause of global disease burden (World Health Organization, 2004), accounting for 4% of the total disability adjusted life years (DALY, the sum of years of life lost due to premature mortality and years of life lost due to disability) lost globally in 2004. CHD is the single most common cause of death in Europe, accounting for 4.3 million deaths each year (Allender, 2009). More than 2.2 million people in England are living with CHD(Scarborough et al., 2010). CHD is most prevalent in those from low socioeconomic groups, with the death rate three times higher amongst unskilled men, compared to those in professional or managerial occupations (Department of Health, 2000). CHD also has a significant economic impact, costing the National Health Service approximately £14 billion in 2006 (Scarborough et al., 2010).

CHD is defined when one or more of the coronary arteries have become narrowed due to fatty deposits (plaques). An MI occurs when a plaque ruptures (which can lead to blood clot formation), blocking the artery completely, resulting in part of the heart

muscle being starved of oxygenated blood and dying (British Heart Foundation). MI involves a sudden onset of pain in the chest and other possible symptoms including pain in the left or right arm, pain which spreads to the neck or jaw, nausea and shortness of breath. For men aged between 30-69 years old the annual incidence of MI, in the UK, is 600 per 100,000, and for women it is 200 per 100,000. In the UK, there are approximately 147,000 MIs per year in men, and 121,000 in women (Cooper et al., 2007). The death rate from MI has fallen by 25% since the early 1970s, although the death rate in the UK is high in comparison to other Western European countries. Death rates are higher in men than women, and higher in deprived compared to affluent areas (Cooper et al., 2007).

Key behavioural risk factors for CHD include smoking, eating an unhealthy diet, physical inactivity, and excessive alcohol consumption. Medical risk factors include obesity, raised cholesterol, diabetes and high blood pressure (British Heart Foundation Health Promotion Research Group, 2012). In recent years, a range of public health initiatives have been undertaken to reduce rates of CHD, and to improve prognosis in those with existing CHD in the UK population. Key policy documents include the 'Coronary Heart Disease national service framework' (Department of Health, 2000) and the National Institute of Clinical Excellence guidelines for secondary prevention of MI (Cooper et al., 2007). Initiatives proposed in these documents have focused on changing health behaviours in healthy individuals (e.g. via development of smoking cessation services and increasing opportunities for regular physical activity), and developing specialist cardiac rehabilitation services to prevent future cardiac events in those with CHD, which include improving screening procedures to identify depression and anxiety in CHD patients.

1.2 The Role of Depression in CHD

Depression, defined as a persistent depressed mood and/or anhedonia, combined with a range of other symptoms including loss of appetite, disturbed sleep, psychomotor agitation or retardation, fatigue, feelings of worthlessness, intense feelings of guilt, concentration difficultiesand recurring thoughts of death or suicide ideation (DSM-IV, First, Spitzer, Gibbon, & Williams, 1997),is common in individuals with CHD. Findings from a meta-analysis, which pooled results from 24 studies (Thombs et al., 2006), indicate that, following MI, clinically significant symptoms of depression occur in between 10-47% of individuals, with 16-27%

meeting diagnostic criteria for a depressive disorder (major depression, minor depression or dysthymia. In a large multi-national case-control study (Rosengren et al., 2004), which compared individuals with MI (*N* = 11,119) to an age-matched sample with no history of MI (*N* = 13,648), those with MI were 1.4 times more likely to be depressed (rate of depression in normal sample = 7%, rate of depression in CHD sample = 8.6%, odds ratio = 1.44) than those in the healthy control group. Moreover, reported prevalence rates are likely to be underestimates because the occurrence of depression in CHD is often under-recognised(Celano & Huffman, 2011).

Depression is associated with a range of adverse outcomes in individuals with CHD: First, depression following MI is associated with an approximate doubling of the risk of (cardiac related and all cause) mortality (Barth, Schumacher, & Herrmann-Lingen, 2004; Bunker et al., 2003; Kuper, 2002; Rozanski, Blumenthal, & Kaplan, 1999; van Melle et al., 2004). Second, depression predicts a poorer response following treatment for CHD including, increased in-hospital cardiac complications (ventricular arrhythmia, congestive heart failure and reinfarction, Huffman et al., 2008) and a greater risk of delirium post-surgery (Tully, Baker, Eld, & Turnbull, 2010); Third, depression is associated with an increased risk of future cardiac events (Frasure-Smith & Lesperance, 2008, 2010; van Melle et al., 2004), and an increased likelihood of hospital re-admissions (Tully, Baker, Turnbull, & Winefield, 2008). Fourth, those who are depressed are less likely to engage with cardiac rehabilitation programs (Casey, Hughes, Waechter, Josephson, & Rosneck, 2008), have reduced physical benefits from cardiac rehabilitation when they do engage (conceptualised as the pre to post cardiac rehabilitation change in exercise capacity, measured in Watts et al., 2008) , and are more likely to drop-out (McGrady, McGinnis, Badenhop, Bentle, & Rajput, 2009). Fifth, depressed individuals are more likely to report reduced life satisfaction following a cardiac event (Page et al., 2009; Tully, Baker, Turnbull, Winefield, & Knight, 2009).

A methodological limitation of many aetiological and prognostic studies which have implicated depression in the aetiology of CHD is that they have not controlled for the effect of disease severity and other cardiac risk factors (e.g. smoking) on CHD outcomes (i.e. the results may be confounded). Results from a meta-analysis of studies which assessed the relationship between CHD and depression (Nicholson, Kuper, & Hemingway, 2006) found that the effect size in relationship

between CHD and depression was reduced by 38% (to 1.61) after adjusting for LV function (a measure of the fraction of blood that is pumped out of the left ventricle with each heartbeat, and which is frequently used as an index of MI severity, e.g. Martens, Hoen, Mittelhaeuser, de Jonge, & Denollet, 2010; Van Melle et al., 2005). No adjustment for coronary risk factors was made in nearly half of the 21 studies included in this previous meta-analysis.Moreover, findings from a number of studies have failed to demonstrate an association between depression and increased risk of mortality (Lane, Carroll, Ring, Beevers, & Lip, 2000a, 2002; Mayou et al., 2000); Nonetheless, even taking account of methodological limitations in a number of the studies which have investigated the relationship between depression and outcome in CHD and some null findings, there remains strong and consistent evidence that depression is associated with increased mortality in CHD patients (Goldston & Baillie, 2008).

There is some debate in the literature as to whether poorer emotional adjustment (i.e. increased depression and anxiety) following MI is associated with increased severity of impairment in cardiac function. Findings from a number of studies indicate that a higher level of impairment in cardiac function following MI (based on a measure of left ventricular ejection fraction) is associated with increased depression (Frasure-Smith, Lesperance, Juneau, Talajic, & Bourassa, 1999; van Melle et al., 2005), whereas, conflicting results indicate that cardiac function is not associated with increased depression post MI (Bush et al., 2001; Carney et al., 2003; Carney et al., 2001; Frasure-Smith, Lesperance, & Talajic, 1995; Strik, Lousberg, Cheriex, & Honig, 2004; Strik, Denollet, Lousberg, & Honig, 2003). The combined results from these previous studies suggest that cardiac function following MI is an unreliable predictor of poor emotional adjustment.

If depression is not a by-product of impaired cardiac function following MI, then this raises the possibility that other biological, psychological and social-contextual factors are implicated in the aetiology of depression following MI. The following section outlines a number of common biological, psychological and social factors which are implicated in the aetiology of CHD and depression separately, and summarises relevant theory and empirical findings which indicate that these factors might be involved in explaining the observed relationship between depression and CHD.

1.2.1 Biological Mechanisms Implicated in CHD and Depression

Autonomic Dysfunction: Heart Rate Variability

Heart rate variability (HRV), a measure of the interval between heart beats, provides a physiological index of autonomic dysfunction. It has been hypothesised that low HRV, indicative of "inflexibility and unbalance of the autonomic nervous system" (Rockliff, Gilbert, McEwan, Lightman, & Glover, 2008, p.133), is a physiological factor which mediates the relationship between depression and increased mortality risk in those with CHD (Celano & Huffman, 2011; Goldston & Baillie, 2008). Consistent with this hypothesis, empirical findings indicate that: (a) there is an association between depression and low HRV (i.e. clinically depressed individuals have low HRV compared to healthy controls, Rechlin, Weis, Spitzer, & Kaschka, 1994), and depressed individuals with CHD have lower HRV than CHD patients who are not depressed, Carney, Freedland, Rich, & Jaffe, 1995; Stein et al., 2000); (b) Low HRV is associated with an increased risk of mortality following MI (Bigger et al., 1992; Kleiger, Miller, Bigger, & Moss, 1987); (c) change in depression prospectively predicts change in HRV (Pichon, Nuissier, & Chapelot, 2010), and treatment of depression increases HRV in patients with CHD (Carney et al., 2000; Chambers & Allen, 2002) and; (d) low heart rate variability partially mediates the effect of depression on mortality risk in CHD patients (Carney et al., 2005). Together, these findings provide preliminary evidence which is consistent with the hypothesis that depression contributes to increased mortality rates in CHD via its deregulating effect on the autonomic nervous system and consequent low HRV.

Dysregulation of the Hypothalamic-pituitary-adrenocortical (HPA) axis

The Hypothalamic-pituitary-adrenocortical (HPA) axis is part of the endocrine system which mediates cortisol in the body, and plays a key role in the regulation of other homeostatic processes (Rosmond & Bjorntorp, 2000). Hyperactivity of the HPA axis results in over activation of the sympathetic nervous system and increasing circulation of catecholamines (adrenaline and noradrenaline) and serum cortisol, leading to surges in heart rate and blood pressure and increased risk of atherosclerotic plaque rupture and acute coronary thrombosis (Goldston & Baillie, 2008). Consistent with this proposed deleterious role of catecholamines on cardiac function, findings from a number of clinical trials have demonstrated that beta-blockers, which down

regulate the sympathetic nervous system, are effective in treatment of heart failure (for a review see Packer, 1992) . There is robust evidence of an association between depression and HPA hyper-activation. This includes numerous findings which have indicated an elevated presence of catecholamines and cortisol in the blood stream of depressed individuals, compared to those without depression, and which have demonstrated the non-suppression of endogenous cortisol secretion (Akil et al., 1993; Ehlert, Gaab, & Heinrichs, 2001; Lesch, Laux, Schulte, Pfuller, & Beckmann, 1988; Stetler & Miller, 2011).

Goldston and Baillie (2008) hypothesised that HPA axis hyperactivity is a biological mechanism which mediates the observed relationship between depression and CHD. Consistent with this hypothesis, findings from a 17 year mortality study, which followed up 54 patients with psychotic or schizoaffective major depression, found that HPA axis hyperactivity (assessed with the dexamethasone suppression test) predicted deaths due to cardio-vascular disease (Coryell, Fiedorowicz, Zimmerman, & Young, 2008). However, this pattern of results was not replicated in an earlier mortality study, which included a more heterogeneous sample (Coryell, Young, & Carroll, 2006, $N = 69$ individuals with major depressive disorder who died during an eighteen year follow up period). Moreover, in a retrospective study (Jokinen & Nordstrom, 2009), HPA axis hyperactivity was associated with cardiovascular death (CVD), but was not associated with mortality related specifically to CHD.

In summary, empirical evidence underpinning the hypothesised relationship between depression, HPA axis hyperactivity and CHD is scant, and results from the small number of studies that have been undertaken are somewhat mixed. Moreover, no study has yet investigated whether change in HPA axis regulation influences outcome in depressed/depression vulnerable individuals with CHD, which would be necessary to establish causality. The current evidence leaves open the alternative possibility that HPA sensitivity, e.g. resulting from early experience of trauma, abuse and/or stress (Heim, Newport, Mletzko, Miller, & Hemeroff, 2008), is a common vulnerability factor for depression and CHD (rather than being a mediator of the relationship between depression and CHD). Thus, the specific nature of relationship between HPA axis regulation, depression and CHD remains to be fully elucidated.

Increased Platelet Activation

Platelets are disc shaped cells which can contribute to the development of heart disease when abnormal clotting occurs (Gregg & Goldschmidt-Clermont, 2003). Research findings indicate that platelet activation is elevated (indicating an increased risk of thrombotic complications) in depressed patients with CHD compared to non-depressed individuals with CHD (Laghrissi-Thode, Wagner, Pollock, Johnson, & Finkel, 1997), and that platelet activation is also increased in those with CHD risk factors (for a review see Bruce & Musselman, 2005). Thus, disturbance in platelet activation could be a biological mechanism through which depression increases risk of mortality in those with CHD. Anti-platelet interventions (e.g. aspirin) are routinely used to help prevent CHD (Cooper et al., 2007). Moreover, recent evidence indicates that selective serotonin re-uptake inhibitor antidepressants (SSRIs) reduce platelet activity in depressed patients (Musselman et al., 2000; Pollock, Laghrissi-Thode, & Wagner, 2000), raising the interesting possibility, which warrants further investigation, that psychopharmacological intervention for depression might reduce the risk of CHD in depressed individuals by reducing platelet activation. Follow up studies are required to more fully investigate the prospective relationship between platelet activation and CHD outcomes in depressed individuals,including randomised controlled trials to investigate whether SSRI's which are known to reduce platelet activity reduce mortality in individuals with depression and CHD).

Immune System Functioning and Inflammation

Inflammation, a response of the immune system, is another biological mechanism posited to mediate the relationship between depression and cardiac disease and increased mortality risk in those with CHD (Celano & Huffman, 2011; Goldston & Baillie, 2008; Lett et al., 2004). There is a substantive evidence base which implicates inflammation in the aetiology of CHD (Haverkate, Thompson, & Duckert, 1995; Koenig et al., 1997; Kuller, Tracy, Shaten, & Meilahn, 1996; Liuzzo et al., 1994; Ridker, Hennekens, Buring, & Rifai, 2000; Tracy, 1998). Findings from a number of studies indicate that depressed individuals have elevated levels of inflammatory markers (Kop et al., 2002; Maes et al., 1993). To date however, there is limited evidence substantiating the hypothesis that inflammation mediates the association between depression and CHD related mortality. Findings from a recent

population cohort study (Kop et al., 2010) were somewhat mixed. Cross-sectional analyses indicated that depression was significantly associated with two markers of inflammation (white blood cell count and Fibrinogen), but a non-statistically significant association was reported between depression and two other inflammation markers (interleukin-6 and C-reacting protein). In a further longitudinal analysis, Kop et al. (2010) found that depression remained a significant predictor of CHD related mortality after controlling for inflammation markers (although the association was reduced by 12.7%). In another study (Vaccarino et al., 2007), which investigated the relationship between markers of inflammation, depression and cardiac events in a sample of women with suspected coronary ischemia (N = 674) over 5.9 years, levels of inflammation (interleukin 6 marker and c-reactive protein were used as markers of inflammation) were statistically significantly higher in depressed women, compared to those without depression, after controlling for other CHD risk factors, co-morbidity and CHD severity. Depression and inflammation independently predicted the occurrence of future cardiac events. Similarly, Empana et al. (2005) found that inflammation (c-reactive protein, interleukin-6, and intercellular adhesion molecule-1) was significantly elevated in depressed males compared to those who were non-depressed (the study comprised a sample of physically healthy males from France and Belgium, N = 889), but that inflammation and depression were independent predictors of future cardiac events. Together, these results suggest that there is an association between depression and inflammation. However, the findings are inconsistent with the hypothesis that inflammation mediates the relationship between depression and future cardiac-related events (including mortality), indicating rather that these are independent predictors of future cardiac events.

1.2.2 Psychological Mechanisms Implicated in CHD and Depression

The following section reviews relevant theory and empirical findings which have implicated psychological mechanisms in the relationship between depression and CHD.

Social Inhibition/Introversion

Social inhibition, defined as "the tendency to inhibit the expression of emotion and behaviour in social interaction" (Denollet et al., 2006, p.171) and introversion, characterised by "inhibition and shyness in social interactions" (Verkerk, Denollet,

Van Heck, Van Son, & Pop, 2005, p.632), are related personality characteristics implicated in the aetiology of depression and CHD.Socio-physiological theory (Price, Sloman, Gardner, Gilbert, & Rohde, 1994) has emphasised the role of social inhibition and introversion in depression, as a mechanism for dealing with social competition. The theory assumes that the depressive state, characterised by social inhibition and introversion, evolved as an adaptive response for yielding in competitive situations, inhibiting aggressive behaviour to superiors and rivals, creating a subjective sense of incapacity and signalling "no threat" to rivals and "out of action" to close others.Consistent with this theorised link between social inhibition/introversion and depression, empirical findings indicate that: (a) remitted depressed individuals have lower levels of extraversion and higher levels of introversion compared to non-depressed controls (Hirschfeld, Klerman, Clayton, & Keller, 1983); (b) that introversion prospectively predicts increased depression (Verkerk et al., 2005) and; (c) social inhibition is associated, concurrently, with treatment resistance in depressed patients (Crawford et al., 2007).

Social inhibition is associated with a poor prognosis in CHD (post-MI patients, Denollet, Pederson, Vrints, & Conraads, 2006; Denollet, Vaes, & Brutsaert, 2000). More specifically, a personality sub-type incorporating high levels of social inhibition combined with high negativity, labelled the "distressed personality" type ("Type D", Denollet, Sys, & Brutsaert, 1995) is associated with an increased risk of negative outcomes following coronary events including: mortality (Denollet et al., 1996), future myocardial infarction (Denollet et al., 2000), and increased rates of post cardiac event depression and anxiety (Denollet, 1998). Repressive coping, (defined as 'denial of negative affect'), which is a response style characteristic of socially inhibited individuals, is also recognised as being a risk/mortality factor for CHD (Denollet, Martens, Nyklicek, Conraads, & de Gelder, 2008).

The "Type D" literature raises the interesting possibility that social inhibition is a personality variable which moderates the effect of depression (a state manifestation of the "negativity trait" which characterises the Type D personality) on CHD outcomes. Consistent with this hypothesis, Denollet, Pederson, Ong et al., (2006) found that, in a sample of individuals who had received a percutaneous coronary intervention (PCI), high negative affect (a composite measure which incorporated items assessing depression, anxiety and trait negative affect) predicted

adverse outcomes in cardiac patients with high levels of social inhibition, but not those with low social inhibition scores (the inhibition/negativity interaction was associated with a 92% increase in risk of future cardiac events). Denollet et al. (2006) proposed that social inhibition modulates the effect of depression on cardiac outcomes via physiological (increased cardiovascular reactivity to stress, decreased cardiovascular recovery from stress, reduced HRV and increased inflammation) and behavioural pathways (poor treatment adherence, reduced engagement in health promoting behaviour).

Hostility and Anger

Anger and hostility, defined as 'a negative mistrustful attitude that includes aggressive behaviour and frequent angry feelings towards others' (Whooley & Wong, 2011, p. 1229) , are over-lapping constructs, both of which are implicated in the aetiology of depression and CHD. The conceptualisation of depression as an internalisation of anger and hostility underpinned Freud's (1917) seminal psychoanalytical theory of depression. More recently, evolutionary theories (e.g. Gilbert, Gilbert, & Irons, 2004; Price et al., 1994) proposed that depression occurs when an individual's natural "fight or flight" defences are blocked, resulting in, respectively, repressed anger or entrapment. Other theories have emphasised a link between depression and outward expression of anger and anger attacks. Thus, cognitive-constructivist approaches have conceptualised a 'depressive interpersonal style', characterised by oscillation between helplessness and anger (Luutonen, 2007). Anger attacks, characterised by "a rapid onset of intense anger and a crescendo of autonomic arousal occurring in response to trivial provocations" (Painuly, Sharan, & Mattoo, 2005, p. 216) are recognised as being a distinct form of anger which occurs in the context of depression, with prevalence estimated at between 30%-44% (Fava, Abraham, Pava, Shuster, & Rosenbaum, 1996; Fava & Rosenbaum, 1999; Fava et al., 1993).

There is substantive empirical evidence which indicates an association between depression and anger/hostility: (a) Pasquini, Picardi, Biondi, Gaetano, & Morosini, (2004) found that anger/irritability and anger/aggressiveness were clinically pertinent psychopathological dimensions in nearly one quarter of depressed individuals (*N*= 222 newly admitted consecutive outpatients with MDD and not other

Axis I or II diagnosis); (b) In a sample of fifty individuals being treated for depression, 82% reported that they suppressed their anger, and, of these, over half (56%) felt that this problem pre-dated the onset of their depression (Gilbert et al., 2004). Moreover, results from another study, indicate that depressed patients suppress significantly more anger than those with PTSD or healthy controls (Riley, Treiber, & Woods, 1989, anger expression did not differ between depressed and control group individuals in this study); (c) Anger prospectively predicts future depression (Nabi et al., 2010; Stewart, Fitzgerald, & Kamarck, 2010); (d) Preliminary findings indicate that treating anger via a therapeutic intervention reduces depression symptoms, and, vice-versa, that treating depression can reduce levels of anger and hostility (Coon, Thompson, Steffen, Sorocco, & Gallagher-Thompson, 2003).

Anger and hostility are implicated in the aetiology of CHD. There is a substantive evidence base which indicates that anger and hostility confer risk of future CHD in healthy individuals and predict a poor prognosis in those with existing CHD. In a recent meta-analytic review, Chida and Steptoe (2009) identified 25 prospective studies which investigated the effect of anger and hostility on CHD in a healthy population, and 19 studies which investigated the effect of anger and hostility on prognosis in those with existing CHD (studies, conducted between 1983 and 2006). Hostility and anger were associated with a 1.19 increased risk of CHD in the healthy population, and a 1.23 increased risk of poor prognosis in individuals with existing CHD, (although the relationship between anger/hostility and future CHD risk was not maintained in studies which controlled for behavioural covariates including diet choices, engaging in exercise and smoking). Extending these previous findings, Newman et al. (2011) found that observed hostility (but not self-reported hostility) was associated with a two-fold greater risk of CHD, even after controlling for a wide range of demographic variables including age, sex and psychosocial variables including depression, in a large sample (N = 1,749) of Canadian adults over a ten-year period.

Findings from two studies indicate that increased CHD risk occurs due to an interaction between (and combined effect of) anger/hostility and depression. Suarez (2003)investigated the effect of anger/hostility and depressive symptoms on levels of interleukin-6 (IL-6, a protein which plays a key role in the development of CHD) in a sample of healthy men who were all non-smokers (N = 90). Interestingly, results

indicated that anger/hostility was associated with elevated levels of IL-6 in those with elevated depressive symptoms (BDI score > 10), but that anger/hostility was not associated with elevated IL-6 in those with high levels of hostility/anger in the context of minimal depressive symptoms. In a replication of this previous study, Stewart, Janicki-Deverts, Muldoon, & Kamarck (2008) investigated the relationship between anger/hostility, depression and IL-6 in a larger community sample of older adults. Replicating the pattern of results in Suarez' study, hostility/anger was associated with elevated IL-6 only amongst those with elevated depressive symptoms.

In an endeavour to explain the joint influence of hostility and depression on CHD, Stewart et al. (2008) hypothesised that: First, the impact of hostility on inflammatory markers (and thus, risk of CHD) is augmented in the context of depression-related glucocorticoid insensitivity (reflecting HPA axis hyperactivity) and/or reduced parasympathetic activity; Second, that hostility related sympathetic activation may be higher amongst individuals with elevated depressive symptoms; Third, depressed individuals may be more vulnerable to the 'cardio-toxic' effect of hostility (i.e. sympathetic response) due to having less social support than non-depressed individuals. Further research is needed to empirically substantiate these proposed hypotheses.

Illness Beliefs and Attributional Style

The cognitive ABC model of distress (Chadwick, 2006; Ellis, 1962) predicts that the emotional and behavioural consequences of negative life events are mediated by cognitive factors. In this model, A denotes an activating event (i.e. such as MI), B denotes cognitive mediation (including beliefs and cognitions about the event, i.e. meaning and one's relationship towards these) and C denotes the emotional or behavioural consequences that follow from B, given A. Beck's (1970, 1983) cognitive theory delineated the role of specific negative beliefs about oneself, the world and the future, labelled the "cognitive triad" in the aetiology of depression. The idea that depression is mediated by cognitive factors is supported by the substantive empirical evidence base which indicates that cognitive behaviour therapy, a treatment modality which is focused on the modification of depressive cognitive processes, is an efficacious treatment for depression (for a review see Butler, Chapman, Forman, & Beck, 2006). Consistent with Beck's conceptualisation of depression, depressed

individuals tend to exhibit a negative explanatory style responding to life events, which is characterised by the tendency to attribute global, stable and internal causes to negative events and to make attributions of uncontrollability (Sanjuan & Magallares, 2009). Findings from numerous studies indicate that this depressive style confers vulnerability to future depression (for a review see Sweeney, Anderson, & Bailey, 1986). Moreover, in a clinical trial which compared cognitive therapy and antidepressant medication (ADM) , differential change in attribution style was found to explain the reduced rate of relapse in the cognitive therapy (CT) condition (change in attribution style was greater amongst those treated with cognitive therapy, and those in the CT condition were half as likely to relapse as those in the ADM condition, Hollon, Stewart, & Strunk, 2006) .

Leventhal's self-regulatory model (Leventhal, 1970; Leventhal, Diefenbach, & Leventhal, 1992) delineated the role of cognitive representations of illness in how people respond to health threats. In this model, cognitive representations of illness interact with the individual's emotional response triggering an adaptive or maladaptive coping response. Leventhal identified three stages in the process of responding to health threats; (a) representation; (b) coping procedures and; (c) appraisals, and proposed that "personality factors" can exert an influence at any stage in this process. Leventhal conceptualised a hierarchical system, in which different processing levels simultaneously (but not necessarily congruently) generate emotional and cognitive representation of illness: (a) sensory motor processing defined as an innate motor system in which emotional responses are motor based feelings which are not associated to objects or events and are not connected with patterns of coping; (b) schematic emotional processing, defined as a rapid automatic response which is governed by prototypic memory structures (schemata) which have developed from early experiences (e.g. repeated loving encounters with parent); (c) conceptual processing, defined as self-reflective and deliberate review of experience. Leventhal (1982) argued that, emotional processing is most frequently associated with schematic memory, because people tend to lack voluntary control of automatically generated emotional reactions, whereas conceptual processing tends to be non-emotional.

Leventhal identified five dimensions of cognitive representations of illness; (1) "identity", the term used by the individual to describe the illness/symptoms; (2) "consequences", the anticipated effects and outcome of the illness; (3) "Timeline", the

anticipated duration of the illness; (4) "Cause", beliefs about the origins of the illness; (5) "Control", the extent to which the individual believes that they can influence their recovery from the illness. Findings from a number of studies indicate that negative illness beliefs (e.g. expectation of severe consequences, long duration of illness and beliefs about low controllability) are associated with a poor prognosis in cardiac patients including increased illness related disability (Petrie, Weinman, Sharpe, & Buckley, 1996), poorer quality of life (French, Lewin, Watson, & Thompson, 2005; Petrie et al., 1996; Stafford, Berk, & Jackson, 2009), a later return to work (Maeland & Havik, 1987; Petrie et al., 1996), poorer attendance at cardiac rehabilitation programs (Cooper, Lloyd, Weinman, & Jackson, 1999; Petrie et al., 1996; Whitmarsh, Koutantji, & Sidell, 2003) and sexual difficulties (Petrie et al., 1996). Moreover, there is evidence that modifying illness beliefs can improve functional outcome in MI patients (Broadbent, Ellis, Thomas, Gamble, & Petrie, 2009; Petrie, Cameron, Ellis, Buick, & Weinman, 2002).

Given that depression vulnerable individuals tend to have negative underlying beliefs about themselves, the world and their future, and that they tend to interpret negative events as being uncontrollable and attributable to internal, global and stable causes, it follows that they will be susceptible to negative CHD related illness beliefs, which could, in turn, interfere with the process of adjustment to cardiac illness. Consistent with this hypothesis, results from one previous study, which investigated the relationship between illness perceptions and depression in a sample of individuals with acute coronary syndrome (N= 661), indicate that increased depression is associated with a tendency to perceive that CHD will have a more chronic time-course (result replicated in both men and women), an increased perception that CHD will have negative consequences, and a low perception of treatability (result obtained for men only, Grace et al., 2005). In addition, longitudinal analyses indicate that negative illness beliefs increase the likelihood of depression onset following MI (low perception of treatment control and perception that illness will last a long time, Dickens et al., 2008a; increased perception of negative consequences of CHD, Stafford et al., 2009), and that illness perceptions (a composite measure of negative illness beliefs was used in this study) predict increased depressive symptoms following cardiac surgery (Juergens, Seekatz, Moosdorf, Petrie, & Rief, 2010).

In summary, negative beliefs are implicated in both the aetiology of depression and the process of adjustment to health events. Depression vulnerable individuals are more likely to hold negative beliefs and to have a negative attributional style, which could influence how they interpret and respond to health events, such as MI, increasing susceptibility to depression, and reducing the likelihood of engaging in adaptive behaviours necessary to facilitate the recovery process (e.g. attending cardiac rehabilitation). Preliminary findings indicate that modifying negative illness beliefs results in a faster return to work following MI. Further intervention studies are required to evaluate the effect of modifying illness perceptions on depression risk in those with CHD.

Behavioural Mechanisms

Another route via which depression might contribute to poor outcomes in individuals with CHD is by adversely affecting behaviour (Goldston & Baillie, 2008). Characteristics of depression (e.g. becoming inactive and withdrawn as a maladaptive coping strategy and negative illness beliefs) might reduce the likelihood that depressed individuals; (a) take preventive measures to mitigate against the onset of CHD, and; (b) will limit the extent to which individuals make necessary lifestyle changes in response to warning signs of CHD, or following a cardiac event. Consistent with this hypothesis, previous research findings indicate that, compared with those without depression, depressed individuals are: (a) more likely to smoke and less likely to quit smoking (Anda et al., 1990; Glassman et al., 1990); (b) less likely to adhere to medication regimes (Carney, Freedland, Eisen, Rich, & Jaffe, 1995; DiMatteo, Lepper, & Croghan, 2000); and are less likely to complete cardiac rehabilitation programs (Casey et al., 2008; McGrady et al., 2009), or to follow recommendations to reduce risk following recovery from MI (e.g. adherence to a low fat diet, regular exercise, reducing stress and increasing social support, Ziegelstein, 2001) . Together, these findings support the hypothesis that increased susceptibility to CHD in depression vulnerable individuals, and the poor prognosis found amongst CHD patients with depression, is associated with depression-related maladaptive health behaviours.

1.2.3 Social and Contextual factors

The following section reviews relevant literature which has examined the relationship between three social factors: (a) stress (acute events and chronic stressors); (b) social support and; (c) socio-economic status in the aetiology of CHD and depression, and considers how these factors might contribute to explaining the relationship between depression and CHD.

Acute and Chronic stress

Stress is an established risk factor for both CHD and depression. Stress has a direct physiological effect on the central nervous system (activation of sympathetic-adrenal-medullary and hypothalamic-pituitary-adrenal pathways, thought to contribute to the formation of atheroma) as well as being associated with increased unhealthy behaviours (Moller-Leimkuhler, 2010). There is a substantive literature which indicates that chronic stress confers vulnerability to CHD. Findings from several studies indicate that work strain predicts CHD risk and mortality (Karasek et al., 1988; Schnall et al., 1990; Theorell, Karasek, & Eneroth, 2009). The perception of having low control at work appears to be a specific feature of work-stress which predicts CHD (Bosma et al., 1997). Relationship strain is another chronic stressor implicated in course of CHD; Results from the Stockholm Female Coronary Risk study (Orth-Gomer et al., 2000) indicated that chronic problems in partner (spouse or cohabitant) relationship were associated with a three-fold risk of cardiac event recurrence over a five-year period (result not found for work stress), after controlling for age, oestrogen status, education level, smoking, diagnosis at index event, diabetes mellitus, systolic blood pressure, smoking, triglyceride level, high-density lipoprotein cholesterol level, and left ventricular dysfunction . Stressful life events, including death of a spouse (Cottington, Matthews, Talbott, & Kuller, 1980; Myers & Dewar, 1975), natural and man-made traumas (Meisel et al., 1991; Steptoe & Brydon, 2009; Trichopoulos, Katsouyanni, Zavitsanos, Tzonou, & Dallavorgia, 1983) and anger episodes (Mittleman et al., 1995) occur with increased frequency prior to cardiac events and cardiac related death.

Stressful life events and/or chronic stress often precede the onset of a depressive episode (Brown & Harris, 1978). Recent theorising and research has proposed a bi-directional relationship between stress and depression, whereby (in addition to stress

being an antecedent of depression) depressed individuals inadvertently contribute to generating stress due to depressogenic cognitive style and maladaptive patterns of behaviour(Hammen, 1991, 2006), and that this "stress generation effect" further contributes to the maintenance of depression.Consistent with this hypothesis, Hammen (1991) found that women who were currently depressed or recently remitted from depression experienced significantly more dependent event stress (i.e. stress which was to some extent self-generated) than women with chronic medical illness, bipolar disorder, or healthy controls, but that they did not differ in the level of independent event stress experienced.

Further empirical studies are required in which stress and depression are evaluated over time, and which include the manipulation of stress and/or depression (e.g. via therapeutic intervention), in cardiac patients, in order to delineate the temporal and causal relationship between these variables. A number of hypotheses can be made about the relationship between stress and depression in those with CHD: First, depression prone individuals might be more susceptible to CHD because they generate more stress; A second possibility is that depression compounds the effect of stress on CHD risk, e.g. due to the effects of depressogenic "cognitive reactivity" (Teasdale, 1983, 1988) and/or ruminative response style. Compared to non-depressed controls, depression vulnerable individuals are more likely to engage in negatively biased self-referent processing in response to salient life events (for a review see Scher, Ingram, & Segal, 2005), leading to a heightened emotional and physiological response to stressors; A third possibility is that stress is a common causal mechanism implicated in both the onset of depression and CHD (Moller-Leimkuhler, 2010).

There is currently a paucity of empirical studies which have investigated the relationship between depression, stress and CHD. The current review identified one study which compared stress and depressive symptoms in women with and without CHD (Balog et al., 2003). The results indicated that women with CHD had higher levels of depressive symptoms and reported more stress in intimate (partner) relationships and work stress than healthy controls. However, due to the cross-sectional nature of this study, the temporal and causal relationship between depression and CHD cannot be deduced. Further longitudinal studies investigating the prospective relationship between life events/chronic stressors, depression and CHD

are necessary to delineate the specific nature of relationship between depression and CHD.

Social Support

Social support, defined as 'having a variety of social contacts who are available as resources for one's personal benefit' (Krantz & McCeney, p.357) is a protective factor in both depression and CHD. Joiner (1997) demonstrated that social support moderated the effect of social inhibition on future depressive symptoms, whereby socially inhibited individuals who reported inadequate social support, but not those who reported good social support, were prone to future increases in depressive symptoms. In another study, social support reduced the effect of infant temperament on post-partum depression in a sample of mothers (Cutrona & Troutman, 1986). However, whilst social support can be of benefit to depressed individuals, depression is, paradoxically, associated with an increased risk of interpersonal rejection, social withdrawal and isolation (for a review see Barnett & Gotlib, 1988). Low levels of social support are also associated with increased risk of CHD (Orth-Gomer et al., 2000; Vogt, Mullooly, Ernst, Pope, & Hollis, 1992) and a poor prognosis (i.e. increased risk of mortality) in cardiac patients (Berkman, Leosummers, & Horwitz, 1992; Case, Moss, Case, McDermott, & Eberly, 1992). Preliminary findings indicate that effective social support mitigates the adverse effect of depression in cardiac patients; Frasure-Smith, et al., (2000) found that depression was associated with an increased risk of future cardiac mortality in individuals who reported inadequate social support, whereas, for those who reported a high level of social support (i.e. scores in the highest quartile of perceived social support) no depression-related increase in cardiac mortality was observed.

In summary, the results discussed indicate that social support is an important protective mechanism in both depression and CHD. Preliminary findings suggest that social support can counteract the harmful effect of depression on prognosis in cardiac patients. The specific mechanisms through which social support influences the effect of on depression and CHD have yet to be elucidated, although it has been proposed that this could be due to a physiological effect (dampening of neuroendocrine activation) and/or facilitating cognitive reappraisal (Lepore, 1988; Uchino, Cacioppo, & KiecoltGlaser, 1996).

Socioeconomic Status (SES)

Socio-economic status (defined as an individual's occupation, economic resources, social standing, and education, Kaplan & Lynch, 1997) is a social factor associated with increased prevalence of both depression and CHD. Results from a meta-analysis of epidemiological studies (Lorant et al., 2003, 55 studies included in the analysis) found that individuals in the lowest SES group were 1.24 times more likely to experience a new depressive episode than those in the highest group. Moreover, once depressed, low SES individuals were twice as likely to persist in depression. Similarly, there is robust evidence of an association between low SES and increased rates of CHD, including atherosclerosis (indicative of sub-clinical level of CHD) and manifest heart disease (Lynch, Kaplan, Salonen, Cohen, & Salonen, 1995; Marmot, 1984). Steptoe and Marmot (2004) proposed that low SES individuals are likely to experience greater life adversity and to have fewer protective and coping resources (e.g. social support, adaptive health behaviour), which will in turn influence physiological responses (e.g. HPA activation) implicated in heart disease. A similar "stress theory" has been proposed to explain the relationship between SES and depression (Lorant et al., 2003). Thus, low SES can be conceptualised as an overarching social factor which influences the other biological, psychological and social risk factors common to CHD and depression.

1.3 The Role of Anxiety in CHD

In comparison to the literature on depression in CHD, there has been relatively little investigation of the role of anxiety in CHD, (with anxiety conceptualised variously as a categorical or continuous variable, reflecting a negative emotional state characterised by feelings of tension, fear, worrying thoughts and panic). However, although it has received less attention in the literature, anxiety is very common in CHD, with prevalence rates ranging from 24% to 31% (Martens, de Jonge, et al., 2010). There have been somewhat mixed findings regarding anxiety and prognosis in CHD. Findings from a number of studies have demonstrated that higher levels of anxiety are associated with a greater number of in-hospital complications following MI (Moser et al., 2007), and increased risk of future cardiac events, including cardiac death (Frasure-Smith & Lesperance, 2008; Grace, Abbey, Irvine, Shnek, & Stewart, 2004; Martens, de Jonge, et al., 2010; Moser et al., 2011; Rothenbacher, Hahmann, Wusten, Koenig, & Brenner, 2007; Shibeshi, Young-Xu, & Blatt, 2007; Strik et al.,

2003). However, results from a number of other studies failed to find an association between anxiety and cardiac death (Lane, Carroll, Ring, Beevers, & Lip, 2000b; Lane et al., 2002; Mayou et al., 2000). Moreover, results from two studies indicated that higher levels of anxiety were associated with lower mortality rates following MI (Herrmann, Brand-Driehorst, Buss, & Ruger, 2000; Ketterer et al., 1998). Results from one study indicated that, although depression and anxiety often co-occur, there is not an additive effect of the two diagnoses on risk of future cardiac events (Frasure-Smith & Lesperance, 2008).

Inconsistencies in findings regarding the relationship between anxiety and CHD prognosis could reflect measurement issues. Studies which have investigated the role of anxiety in CHD differ according to: (a) whether they have used questionnaire measures of anxiety symptoms (Grace et al., 2004; Shibeshi et al., 2007), or diagnostic interviews (Frasure-Smith & Lesperance, 2008; Martens, de Jonge, et al., 2010) and; (b) whether they have focused on assessment of anxiety at one time point compared to the maintenance of anxiety over time (Moser et al., 2011; Shibeshi et al., 2007). Findings from one study (Frasure-Smith & Lesperance, 2008) which included both a diagnostic interview assessment and a questionnaire measure of anxiety (and depression) indicated that the greatest risk of future cardiac events was found in those who met diagnostic criteria (for Generalised Anxiety Disorder and Major Depressive Disorder) and that there was a greater confounding effect of medical and background factors in self-report assessment of anxiety and depression.

Most of the research which has investigated physiological pathways via which negative emotion influence CHD has focused on depression. However, findings from a number of studies suggest that the role of anxiety and depression in CHD may be linked to the same underlying physiological mechanisms. Anxiety is associated with a number of physiological mechanisms which are also implicated in the aetiology of CHD including; (a) increased circulation of catecholamines (adrenaline and noradrenaline, Cameron & Nesse, 1988) (b) increased heart rate and decreased heart rate variability (Thayer, Friedman, & Borkovec, 1996) and; (c) increased platelet activity (Zafar et al., 2010). Anxiety and depression tend to be highly correlated with each other, in both physically healthy individuals and those with CHD (Herrmann et al., 2000; Suls & Bunde, 2005). The observed strength of correlation between anxiety and depression supports the hypothesis that these negative emotional states contribute

to poor outcomes in CHD via a common underlying physiological and biological pathway. However, to date, there is a lack of research which has specifically investigated the potential mediating role of these physiological mechanisms in the relationship between anxiety and adverse outcomes in CHD.

Whilst there is a strong theoretical rationale, substantiated by empirical findings from a range of studies, which indicates that depression is associated with maladaptive health behaviours (as summarised in section 1.2.2), it is unclear that anxiety is associated with maladaptive health behaviour. For example, whereas there is a consistent relationship between depression and non-adherence to medical regimes, this same relationship has not been observed in those who are highly anxious (DiMatteo et al., 2000). Indeed, it has even been proposed that anxiety could facilitate help seeking and increase motivation to control coronary risk factors (Herrmann et al., 2000). Consistent with this hypothesis, anxious patients are more likely to receive coronary angiography than those who are less anxious (Schocken, Greene, Worden, Harrison, & Spielberger, 1987). However, there is currently a lack of empirical evidence underpinning understanding of the role of anxiety and health behaviour in CHD, which limits drawing conclusions.

1.4 Psychological Intervention for Depression and Anxiety in CHD

The findings, previously summarised, which indicate that depression and, to a lesser extent, anxiety has an adverse effect on prognosis in cardiac patients raises the possibility that reducing depression and anxiety in those with CHD could improve outcomes (i.e. that reducing depression and anxiety will lead to reduced mortality rates and lower risk of future cardiac events in individuals with CHD). A recent COCHRANE review (Whalley et al., 2011) evaluated the pooled results from 24 randomised controlled trials (undertaken between 1999 and 2009) which tested the effect of specific psychological interventions for CHD. Of the 24 studies included in the review, half (12) identified treatment of depression as a therapeutic aim, and 15 studies included treatment of anxiety as a focus of therapy. Results from this review indicated that psychological interventions significantly reduce symptoms of depression and anxiety in those with CHD. Moreover, consistent with a causal relationship between depression and CHD, there was a significant effect of intervention on cardiac related deaths in the intervention group (RR 0.80, results were pooled across all studies which included cardiac related mortality as an outcome

measure, $n = 5$, there was no strong evidence that psychological intervention reduced total deaths). Interventions which focused on treating type-A behaviours (anger and hostility) were significantly more effective in reducing depression than other interventions.

Identifying which treatments are most effective, (and which specific mechanisms of change influence outcomes), is problematic due to between study treatment heterogeneity. The interventions reviewed by Whalley et al. (2001) included a range of different therapeutic components including behaviour change; relaxation; cognitive challenge/restructuring; client led discussion; social support; self-monitoring/awareness; CHD and risk education and emotional support. Interventions also differed according to treatment modality (individual therapist versus group intervention), and treatment duration (range between 4 hours and 96 hours contact time with patients). In summary, the combined results of previous trials as reviewed by Whalley et al., (2011) indicate that psychological treatments can be effective in reducing depression and anxiety in those with CHD, and that psychological interventions are associated with a reduced risk of cardiac (but not all cause) mortality. However, incorporating limitations of the existing evidence base, Whalley et al., (2011) argued that further dismantling studies and longitudinal studies, identifying psychological and physiological mediators of change, are required to delineate the active components of therapy, and to enable the development and evaluation of standardised psychological interventions for depression in CHD.

1.5 Summary: The Relationship between Depression, Anxiety and CHD

In conclusion, there is substantive evidence that depression is especially pernicious in the context of CHD, associated with an increased risk of future cardiac events and mortality. A smaller evidence base supports the association between anxiety and adverse outcomes in CHD. Given that anxiety and depression tend to be co-morbid conditions, that they are highly correlated (Suls & Bunde, 2005), and given that genetic research suggests that there is a high degree of commonality in the genes that influence both disorders(Kendler, Heath, Martin, & Eaves, 1987), it follows that anxiety and depression following MI represent different, but closely inter-related, facets of poor emotional adjustment to MI (Suls & Bunde, 2005). Indeed, it has been proposed elsewhere that major depressive disorder and generalised anxiety disorder should be included within one common diagnostic category in the DSM-V, i.e.

reflecting a "distress disorder" (Watson, 2005). Thus, measures of both anxiety and depression were used to index "poor emotional adjustment" in the current study.

Providing a theoretical and empirical context for the thesis, a bio-psycho-social model has been proposed (Figure 1) to explain the relationship between CHD and depression and anxiety. There is currently a paucity of empirical studies which have evaluated the joint contribution of, and inter-relationship between, the multiple factors implicated in CHD prognosis, and there is no overarching theoretical model. However, it is likely that the different factors identified are inter-related. For example, temperamental factors (social inhibition and hostility) will influence how those with CHD interact socially with others, affecting the amount of social support received, and thereby indirectly influencing vulnerability to depression. Considering that the way people relate to others (i.e. being socially inhibited or hostile) and that the way that they relate to their illness (i.e. their illness beliefs) influences CHD outcomes, this raises the interesting possibility, which has yet to be investigated, that how one relates to oneself might be another factor which influences adjustment to CHD and, specifically, vulnerability to depression following a serious cardiac event (Myocardial Infarction). The following section introduces the concept of self-compassion, which can usefully be conceptualised as "an emotionally positive self-attitude" (Neff, 2003b, p.85), and reviews relevant theory and empirical findings which provide a theoretical rationale for the overarching thesis hypothesis that self-compassion is a psychological factor which affects adjustment to CHD.

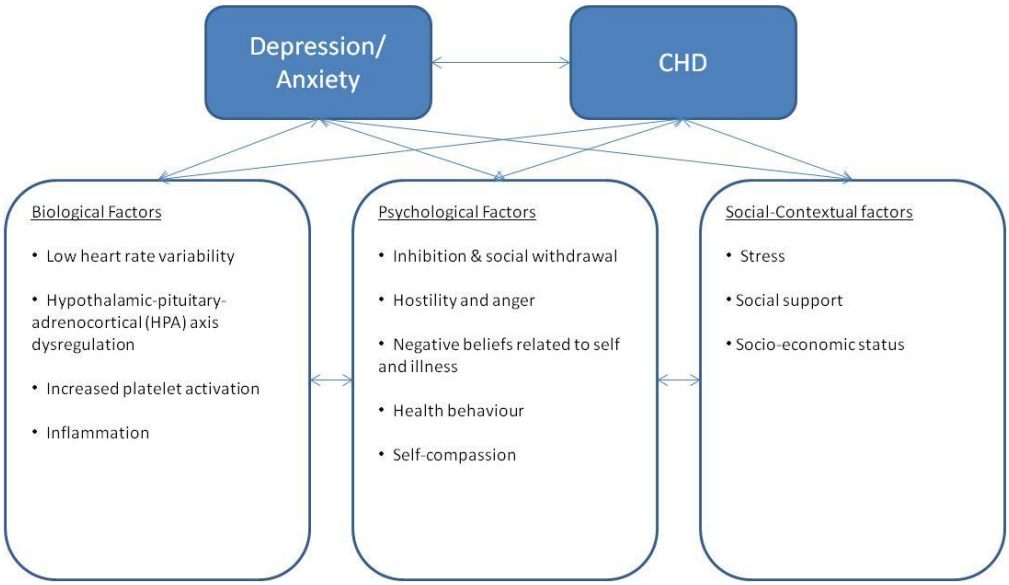

Figure 1. Bio-psycho-social factors which contribute to explaining the relationship between CHD, and depression and anxiety

1.6 Self-compassion

1.6.1 Definition and Theory

Recent theoretical models of depression and its treatment have highlighted the role of self-compassionas a protective factor against depression and anxiety, which increases resilience dealing with adversity (Gilbert, 2010; Neff, 2003a, 2003b; Neff & McGehee, 2010).Self-compassion is an adaptive mode of relating to oneself which "protects against the negative consequences of self-judgment, isolation and rumination" (Neff, 2003b, p.85). Moreover, in contrast to self-esteem, self-compassion is not constituted by evaluations of one's personal performance or concerns about approval from others (social comparison).

Dimensions of Self-compassion

Neff (2003a, 2003b) conceptualised three dimensions of being self-compassionate in response to suffering or personal failure: (a) the first, labelled "self-kindness", incorporates being kind and understanding to oneself as an alternative to being self-critical; (b) the second, labelled "common humanity" entails experiencing one's individual difficulties as being part of the larger human experience, recognising one's connection to others, and forgiving oneself for human limitations and

imperfections. Recognising one's connections to others in response to adversity contrasts to feeling isolated and separate from others; and (c) the third labelled "mindfulness" encapsulates the ability to hold painful thoughts and feelings in "balanced awareness", rather than over-identifying with or avoiding thoughts. Neff proposed that the different components of self-compassion interact and mutually enhance one another. In a recent elaboration of Neff's theory, Barnard & Curry (2011) proposed that being self-compassionate necessitates having self-kindness, common humanity and mindful awareness, and hypothesised their interrelationship (or interdependence). Specifically, they proposed that: (a) self-kindness fosters common humanity, because individuals who are kind to themselves are less likely to feel ashamed and to retreat from others when experiencing difficulties; (b) self-kindness will facilitate mindfulness because being kind to oneself makes it more tolerable to stay in the present moment and to take a balanced view (rather than dwelling on the past or avoiding thinking about one's difficulties); (c) common humanity will facilitate self-kindness and mindfulness, because those who are closely connected to others (and who are frequently exposed to the life difficulties experienced by other people) are more likely to take a balanced perspective on their own difficulties, and to perceive their weaknesses as being part of the human condition; (d) mindfulness may foster self-kindness and common humanity because identifying and objectively labelling thoughts may help minimise self-judgment and facilitate understanding that other people have similar weaknesses and/or difficulties.

Self-compassion and Psychological Well-being

Neff (2003a, 2003b) theorised a number of ways in which being self-compassionate can promote psychological and physical well-being: First, self-compassion buffers against the impact of adversity because pain and the experience of failure are not amplified through self-condemnation. Thus, being self-compassionate will reduce depression, anxiety and neurotic perfectionism; Second, self-compassionate individuals will try to prevent personal suffering and are therefore more likely to engage in behaviours which promote health and well-being (e.g. eating healthily). Thus, Neff proposed that "truly having compassion for oneself entails desiring health and well-being for oneself, which means gently encouraging change where needed and rectifying harmful or unproductive patterns of behaviour" (Neff, 2003a, p.225); Third, those who are self-compassionate are more likely to be

intrinsically motivated (i.e. to be motivated by the desire to develop new skills and the joy of learning), rather than being motivated by a desire to defend self-worth; Fourth, self-compassionate individuals will make more accurate self-appraisals than those with low levels of self-compassion because they do not have to hide their shortcomings from themselves to avoid self-judgment, and are less susceptible to biased self-referent information processing; Fifth, self-compassion promotes emotional approach coping in response to stress, and self-compassionate individuals will be better than those low in self-compassion at identifying how their own actions and behaviour are maintaining or exacerbating a difficult situation, facilitating a problem focused approach to resolving difficulties.

In contrast to Neff's focus on the role of self-compassion in healthy individuals, Gilbert (2010) focused on explaining the origins of low self-compassion in individuals with complex mental health difficulties. Drawing on evolutionary, neuroscience and social psychological theories, Gilbert proposed that some, self-critical, individuals have an under-developed capacity for self-compassion due to a lack of affectionate caring from attachment figures in early childhood. Gilbert conceptualised three interacting emotion-regulation systems: (1) threat and protection systems, (2) drive/resource seeking systems and, (3) contentment, soothing, and safeness systems), and argued that feelings of compassion, warmth and reassurance are linked to a distinct affect regulation system, with a specific neurological and hormonal basis. Gilbert's model evolved from the clinical observation that, during cognitive therapy, some patients have difficulty experiencing benefits from challenging negative cognitions. Gilbert hypothesised that this difficulty occurs when an individual's alternative thoughts are "heard" with a cold, detached or aggressive tone. This observation led to the development of "Compassion Focused Therapy" (CFT, Gilbert, 2010) a therapeutic approach which comprises a series of therapeutic exercises focused specifically on developing self-compassion, as an alternative to focusing on the content of thinking.

Self-compassion and Health Behaviours

In a development of Neff's conceptualisation and theory of self-compassion, Terry & Leary (2011) outlined a number of hypotheses regarding how self-compassion influences the self-regulation of health promoting behaviours. They

proposed that; (a) self-compassion is associated with setting realistic health-related goals, because self-compassionate individuals are less likely to set goals based on a desire to bolster self-worth or impress others, and are more likely to identify goals targeted at enhancing happiness and well-being; (b) individuals who are high in self-compassion are more likely to seek out appropriate medical attention, than those low in self-compassion, because they will be less likely to see their medical problems as being unique, and a cause for embarrassment or shame; (c) self-compassionate individuals are more likely than those low in self-compassion to adhere to medical regimens, because negative feelings such as shame, self-blame, non-acceptance and anger (factors, related to low self-compassion), are known to interfere with self-regulation; (d) the mindful stance characteristic of those with high self-compassion will increase non-judgmental monitoring of behaviour and goals, and will facilitate appropriate goal disengagement; (e) self-compassion enhances the ability to manage negative emotions dealing with aversive aspects of ill health such as visits to the doctor, rehabilitation regimes and coming to terms with aspects of illness for which they have to take some personal responsibility (e.g. failure to use a seat-belt, condom, sun-screen).

Self-compassion and Metacognition

The following section considers self-compassion in relation to metacognition, defined as "the ability to think about one's own inner states, and the inner states of others, allowing for complex self-experience and coping with distress" (Gumley, 2011, p. 73). Semerari et al., (2003) delineated a modular structure of metacognition, providing a useful framework for considering the relationship between self-compassion and metacognition. First, Semerari et al. (2003) proposed that metacognition involves "understanding one's own mind", comprised of; (a) "identification", the ability to identify and label inner states (emotions and cognitions); (b) "relating variables", the ability to make links between different components of mental states, and between components of mental states and behaviour; (c) "differentiation", the ability to recognise that contents of representations are subjective events, different from reality; and (d) "integration", the ability to form coherent descriptions of mental states and processes, giving a sense of continuity to the self. Understanding one's own mind is integral to being self-compassionate (based on Neff's 2003a, 2003b definition), because being self-

compassionate, entails "clear seeing and acceptance of mental and emotional phenomena as it arises" (Neff, 2003b, p.88), rather than over-identification with, or avoidance of, mental phenomena. Second, Semerari et al. (2003) proposed that metacognition involves understanding other's minds (which entails the same processes of "identification", "relating variables", "differentiation" and "integration" but applied to making sense of other people's mental states and processes rather than interpreting one's own internal states). Consistent with the hypothesis that self-compassion is associated with better understanding of other's minds, Neff and Pommier (2013) recently demonstrated that self-compassion is associated with increased perspective taking (i.e. "stepping into another's shoes so that one has deeper understanding and resonance with his or her point of view, Neff & Pommier, p.7), a dimension of "other-focused concern".

Given that self-compassion and metacognition are related, this raises the question of whether the two constructs can be meaningfully distinguished. In addressing this issue, it can be noted that self-compassion entails not only noticing one's internal states (involving metacognition), but also accepting and responding to oneself with kindness. Consistent with the hypothesis that self-compassion and metacognition are separate, but related, constructs, Neff (2003a) found that although self-compassion was correlated with two sub-scales of the Trait-Meta Mood Scale, a measure of metacognitive abilities, ("Clarity" which assesses the clarity of individuals' experience of their feelings, $r = .43$, $p < .01$, and "Repair", which assesses individuals ability to regulate their mood states, $r = .55$, $p < .01$), the correlations were not high enough to indicate that the scales were assessing the same underlying construct. Moreover, self-compassion was not correlated with the attention sub-scale (which assesses the degree of attention that individuals devote to their feelings), potentially reflecting that attention to feelings can be mindful or ruminative (Neff, 2003a). Considering the nature of relationship between self-compassion and metacognition, it is theoretically plausible that self-compassion is supported by and supports metacognition; (a) Being self-compassionate necessitates having metacognitive abilities, e.g. contextualising one's personal experience of suffering as being part of the wider human experience necessitates having the ability to think about one's inner states; (b) Being self-compassionate could also promote meta-cognitive awareness, because, self-compassion makes reflection on the experience of

suffering and/or failure more tolerable. Further empirical investigation is required to substantiate these hypothesised relations between self-compassion and metacognition.

Measuring Self-compassion

Neff (2003a) devised a questionnaire measure to assess self-compassion, the Self-Compassion Scale (SCS). The scale items were derived from pilot testing with a sample of undergraduate students (*N* = 68, mean age = 21.7 years) who met in focus groups during which participants were encouraged to speak naturally about experiences of pain and failure and then rated potential scale items over a number of weeks. During a second phase of pilot testing a different group of individuals (*N* = 71, mean age = 21.3 years) checked whether any items of the scale were confusing, and a revised scale was produced. The scale was then administered to another larger sample of participants (*N* = 391). Results from a confirmatory factor analysis indicated that two-factor models for each self-compassion component fitted the data well, giving six factors: (1) self-kindness, (2) self-judgment, (3) common humanity, (4) isolation, (5) mindfulness and (6) over-identification. Confirmatory Factor Analysis (CFA) indicated that the single higher order self-compassion factor fitted the six inter-correlated factors to the 26 items included in the SCS adequately well (NNFI = .90, CFI = .91), internal consistency for the SCS was .92. The results indicated that self-compassion is an overarching factor. Demonstrating convergent validity of the scale, the SCS was negatively correlated with self-criticism (assessed using the Depressive Experiences Questionnaire, Blatt, D'Afflitti & Quinlan, 1976) and positively correlated with social connectedness (assessed using the Social Connectedness Scale, Lee & Robins, 1995). The factor analytic structure of the SCS was replicated in a second study (N = 232 undergraduates, mean age = 21 years, Neff, 2003a, Study 2). In this second study discriminant validity of the SCS was established: The SCS was only moderately correlated with a measure of self-esteem (Rosenberg Self-esteem Scale, Rosenberg, 1965), and self-esteem, but not self-compassion, was correlated with a measure of narcissism (Narcissistic Personality Inventory, Raskin & Hall, 1979).

Shortened forms of the SCS have been implemented in two recent studies: First, Batts Allen, Goldwasser & Leary (2012) developed an abridged version of the SCS which comprised 12 items, consisting of the four items which loaded highest

onto each of the three SCS factors. Second, Raes, Pommier, Neff and Van Gught (2011) created a different 12 item scale which demonstrated the same factor structure as the original SCS in three different samples and which was highly correlated with the original SCS (R = > 0.97 all samples).

1.6.2 Self-compassion Literature

Self-compassion Dealing with Failure and Adversity

Neff's proposal that self-compassion has psychological benefits is substantiated by empirical findings from a number of naturalistic and experimental studies which indicate that individuals who are high in self-compassion (assessed using the SCS, Neff, 2003a), have a more adaptive, cognitive, behavioural and emotional, response to adversity and failure than those low in self-compassion. More specifically, responding to adversity and failure related events self-compassion is associated with: (a) reduced negative affect (Leary et al., 2007, study 1, 2, 3, Neff et al., 2007); (b) reduced negative and self-critical thoughts (e.g.,Leary et al., 2007, studies 1, 2); (c) a more adaptive coping response, including problem focused coping/approach emotional coping (rather than avoidance emotion focused coping, Neff et al., 2005), and greater behavioural equanimity (defined as remaining calm and unflustered and not over-reacting, Leary et al., 2007, study 2); (d) a more inter-connected view of self (Neff et al., 2007). In these previous studies, adversity and failure related events have been operationalised as: (a) recalling negative events experienced (daily hassles, Leary et al., 2007, Study 1; experience of failing in a mid-term exam, Neff et al., 2005) , (b) responding to hypothesised negative events (e.g. forgetting a part while performing on stage, Leary et al., 2007, study 2), (c) responding to simulated negative experiences in a laboratory, including, receiving ambivalent interpersonal feedback (Leary et al., 2007, study 3), undertaking a mildly embarrassing task, (Leary et al., 2007, study and 4) responding to an imaginary interview question (Neff et al., 2007). In a recent study which investigated the role of self-compassion in adjustment following divorce, low self-compassion was associated with increased emotional intrusion into everyday experience, heightened somatic arousal and higher levels of avoidance behaviour (Sbarra, Smith, & Mehl, 2012).

Consistent with the hypothesis that self-compassion is causally implicated in how people respond to adversity, findings from two experimental studies indicate that

increasing self-compassion results in a more adaptive response to failure related events: First, Leary et al. (2007, study 5) demonstrated that inducing self-compassion (an induction was used whereby participants responded to specific prompts which were designed to make them think about a negative event in a self-compassionate manner) was associated with reduced negative affect recalling the negative event, and an increased tendency to accept personal responsibility for what had happened, and to consider that this was something commonly experienced by other people (compared to self-esteem induction and control conditions); Second, in another experimental study (Neff et al., 2007) increasing self-compassion (using a therapeutic exercise, the Gestalt two chair exercise) was associated with increased social connectedness and decreased self-criticism, rumination, depression, thought suppression and anxiety in a sample of undergraduates (N = 40).

Self-compassion and Depression and Anxiety

Findings from a number of studies indicate that self-compassion is negatively correlated concurrently with depression and anxiety (Mills, Gilbert, Bellew, McEwan, & Gale, 2007; Neff, 2003a; Neff et al., 2005; Neff et al., 2007; Neff, Pisitsungkagarn, & Hsieh, 2008; Raes, 2010; Van Dam, Sheppard, Forsyth, & Earleywine, 2011; Ying, 2009). The relationship between sub-scales of the SCS and depression was examined in two of the aforementioned studies (Mills et al., 2007; Ying, 2009). Results indicated that depression is correlated with all of the sub-scales of the SCS, but that the relationship between the SCS and the positive sub-scales of SCS (Self-kindness, Common humanity and Mindfulness sub-scales) is weaker than the relationship between the SCS and the negative sub-scales of the SCS (Self-judgment, Isolation and Over-identification sub-scales). Results from two studies indicate that the relationship between self-compassion and depression is mediated by rumination (brooding, Raes 2010), and decreased coherence (Ying, 2009 with decreased coherence defined as a global orientation comprised of comprehensibility, manageability and meaningfulness), and that the relationship between self-compassion and anxiety is mediated by rumination (brooding) and worry (Raes, 2010).

Consistent with there being a causal relationship between self-compassion and vulnerability to depression, findings from two intervention studies indicate that

increasing self-compassion can reduce depressive symptoms: First, published outcomes from a large randomized controlled trial (RCT), which evaluated the effectiveness of mindfulness-based cognitive therapy for recurrent depression (MBCT, Kuyken et al., 2010), indicated that self-compassion is a key mechanism of change in this treatment; The effects of MBCT (depressive symptoms 15 months following treatment) were mediated by enhancement of self-compassion (and mindfulness); Second, in a pilot studywhich evaluated compassionate mind training (CMT) in a small sample of individuals (N = 6) with chronic mental health difficulties (Gilbert & Procter, 2006), there was a significant pre to post intervention reduction in depression and anxiety, and a corresponding reduction in self-criticism (self-compassion was not measured in this study).

Self-compassion, Goal Orientation and Behaviour

In an endeavour to increase understanding of how students maintain well-being dealing with the stress of managing multiple, competing, academic goals, Neely, Schallert, Mohammed, Roberts, & Chen (2009) investigated the relationship between self-compassion, goal management and well-being (with an overall index of well-being incorporating purpose in life, self-mastery, perceived stress, intrusive thoughts and satisfaction with life) in two student samples (sample 1, N = 203 undergraduates, Sample 2, N = 271 undergraduates) self-compassion was significantly positively correlated with both life satisfaction, goal re-engagement and goal disengagement (result for goal disengagement only observed in one of the two samples). Both self-compassion and goal re-engagement were significantly associated with increased well-being. In two further studies, Neff et al. (2005) investigated the relationship between self-compassion, academic achievement goals and coping with perceived academic failure. In two student samples (Study 1, N = 222, Study 2, N = 110) self-compassion was positively associated with mastery goals (defined as goals motivated by curiosity and a desire to learn new skills) and negatively associated with performance goals (defined as goals motivated to defend or enhance self-worth, the findings were not replicated in one other study, Williams, Stark, & Foster, 2008). With regards to goal related behaviours, self-compassion is associated positively with conscientiousness (Neff, Rude, & Kirkpatrick, 2006) and is negatively associated with procrastination and perfectionism (Williams et al., 2008).

Together, these findings are consistent with the hypothesis that self-compassion promotes adaptive goal oriented behaviour.

Physiological Correlates of Self-compassion

Rockliff et al. (2008) proposed that the soothing/calming effect of receiving compassion is associated with a calm physiological state, characterised by dynamic balancing of the sympathetic and para-sympathetic nervous system and increased HRV and cortisol decrease. In a pilot study (N = 22), Rockliff et al. (2008) investigated the effect of inducing compassion (via compassion focused imagery, CFI) on HRV and cortisol production. Results from this previous research indicated that, following CFI, some individuals responded with an increase in HRV, whereas others reported a decrease in HRV (indicating a physiological threat response to compassion). Interestingly, those with an increased HRV in response to the CFI had higher baseline levels of self-compassion (assessed using the SCS) and self-reassurance than those who responded to CFI with a decrease in HRV (although, the relationship between SCS and change in HRV was not statistically significant, possibly reflecting a lack of statistical power to detect the relationship). For those who exhibited an increase in HRV during CFI there was a significant decrease in cortisol, whereas only a minimal decrease in cortisol was observed in those whose HRV decreased. These preliminary results raise the possibility that one pathway through which self-compassion might influence outcomes in those with CHD is via its effect on the functioning of autonomic nervous system, because low HRV is a factor implicated in a poor CHD prognosis.

Self-compassion, Physical Health and Health Behaviours

A small number of studies, some of which have yet to be published, have investigated the relationship between self-compassion and physical health and health behaviours.

Self-compassion and Quality of Life in Physical Poor Health

Findings from two studies indicate that self-compassion moderates the effect of illness and poor physical health on subjective quality of life. First, in a sample of older adults (N = 132, aged between 67 and 90 years old, Batts Allen et al., 2012), self-compassion was positively associated with increased subjective well-being in

those with poor physical health (subjective well-being was high in good physical health regardless of self-compassion). Second, preliminary findings, (presented at the APOS 9th Annual Conference, 2012), indicated that self-compassion (assessed using the SCS) was significantly associated with improved quality of life (Forti & Cashwell, 2012) in a sample of breast cancer survivors (N = 133). Together, self-compassion and alexithymia accounted for 32% of variance in quality of life (control variables not specified). Interestingly, in a recent study (Raque-Bogdan, Ericson, Jackson, Martin, & Bryan, 2011), self-compassion was negatively correlated with physical health in a sample of college students (i.e. poor physical health was associated with higher levels of self-compassion, N = 208). Interpreting these results, Raque-Bogdan et al., speculated that increasing self-compassion may be an adaptive response to poor physical health. The results leave open the possibility that, decreasing self-compassion might be an alternative, maladaptive, response to poor physical health for some i.e. depression vulnerable, individuals. Further research is required to substantiate understanding of the relationship between self-compassion, subjective quality of life and changes in health status.*Self-compassion and Health Behaviours*

Preliminary findings indicate that self-compassion is associated with health behaviours: First, in a sample of older adults (N = 71, aged between 63 and 97 years old, Batts Allen et al., 2012, Study 2) individuals who were high in self-compassion reported an increased willingness to use a walking aid than those low in self-compassion, were more likely to ask people to repeat themselves to compensate for hearing loss, and were more likely to use memory strategies to facilitate remembering (although, high self-compassion individuals with impaired mobility were less likely to use another person for support than those with low self-compassion and impaired mobility). Those high in self-compassion were less bothered than those low in self-compassion by the fact that they had to use assistance for walking; Second, in an experimental study which investigated the effect of self-compassion on over-eating in a sample of "restrained eaters" (Adams & Leary, 2007), defined as individuals who consciously try to avoid eating certain "forbidden" foods and who experience related eating guilt), inducing self-compassion reduced self-criticism and negative affect after eating a high fat snack (doughnut), and was associated with a reduced tendency to eat sweets after eating the doughnut; Third, self-compassion is associated with an increased tendency to seek medical attention and increased motivation to follow

doctor recommendations (Terry, Leary, Mehta, & Henderson, Manuscript in preparation); Fourth, self-compassion was associated with better adherence to retroviral medication in a sample of HIV infected individuals(Brion, Leary, & Drabkin, In press); Fifth, increasing self-compassion improved resisting the urge to smoke in a smoking cessation group(Kelly, Zuroff, Foa, & Gilbert, 2010).

Critique of Neff's (2003a, 2003b) Theory of Self-Compassion

Most empirical research which has tested Neff's theory of self-compassion has focused on investigating the "buffering effect" of self-compassion on the negative emotional impact of failure and adversity, and, related to this, has examined the relationship between self-compassion and measures of emotional adjustment (e.g. depression, anxiety, life satisfaction). Much of the empirical evidence substantiating Neff's proposal that self-compassion promotes positive emotional adjustment has derived from correlational studies with student samples (e.g. Mills et al., 2007; Neff, 2003a; Neff et al., 2005). Limitations of these correlational studies are that: (a) they fail to establish causality, and; (b) use of student samples leaves unresolved to what extent the findings can be generalised to other populations. Notable exceptions are: (a) two studies, in which self-compassion was manipulated experimentally (Leary et al., 2007; Neff et al., 2007), and; (b) two intervention studies, which used clinical samples, and in which self-compassion was manipulated via therapeutic techniques (Compassion Focused Therapy, Gilbert & Proctor, 2006; MBCT, Kuyken et al., 2010).

Empirical evidence substantiating other aspects of Neff's theory is, at present, less extensive than research which has examined the relationship between self-compassion and emotional adjustment. First, investigation of the relationship between self-compassion and behaviours which promote health and well-being has, to date, focused on a small sub-set of health behaviours (e.g. use of assistive devices, Batts Allen et al., 2012; retroviral medication adherence, Brion et al., in press), in specific populations (e.g. older adults, Batts Allen et al. 2012; adults with HIV, Brion et al., in press). Moreover, these studies have mainly used a correlational design (exceptions are Adams & Leary, 2007; Kelly et al., 2010), so that causality has not been demonstrated. Further research, including studies in which self-compassion is manipulated, and comprising a broad range of different health behaviours, is required

to substantiate Neff's (2003a, 2003b) proposal that self-compassion gives rise to adaptive health behaviours. Second, there is currently a paucity of research which has empirically evaluated Neff's (2003a, 2003b) claim that low self-compassion is associated with biased self-referent information processing, and there is only limited evidence which indicates that self-compassion promotes taking responsibility for one's difficulties (Leary et al., study 5 is an exception).

Another limitation of the literature which substantiates Neff's (2003a, 2003b) theory is reliance on self-report measurement of self-compassion. Neff (2003a) reflected that, for some (especially those with a tendency to repress or avoid emotions), it might be difficult to assess self-compassion using a self-report format. However, whilst acknowledging the potential difficulties in assessing self-compassion via self-report, it can be noted that the SCS is a psychometrically robust and theoretically sound measure of self-compassion, which has been used to assess self-compassion in numerous different studies. Moreover, there is a growing evidence base which indicates that the SCS can be used to assess self-compassion in a diverse range of individuals, including older adults (Batts Allen et al. 2012), people with chronic physical health conditions (Brion et al., in press) and people with severe mental health problems (Mills et al., 2007). A further limitation of the literature supporting Neff's (2003a, 2003b) theory is a lack of empirical evidence substantiating the hypothesised relations amongst the sub-components of self-compassion (exceptions are Mills et al., 2007; Ying, 2009). Further research is required to test the theorised relations amongst the components of self-compassion, e.g. intervention studies could be designed to test whether increasing one component also increases the other two components.

1.6.3 Self-compassion and Adjustment to MI

The theory and empirical findings reviewed raise thepossibility, which has not yet been subject of empirical investigation, that self-compassion facilitates adjustment following a cardiac event. Neff's theory suggests that cardiac patients who are high in self-compassion will be: (a) less likely to be overwhelmed by depression and/or anxiety following the cardiac event; (b) more likely to view their illness in an objective and mindful way, likely to facilitate the endorsement of adaptive illness beliefs (e.g. perception that illness can be controlled via lifestyle change); and (c) that

they will be more likely to take the required actions (e.g. attending rehabilitation program, appropriate pacing in the cardiac rehabilitation program, making lifestyle changes) necessary to optimise the recovery process, than those who are low in self-compassion, and, further, that increasing self-compassion could enhance adjustment (with the term adjustment encapsulating individuals' emotional and behavioural response to the cardiac event) following a cardiac event.

1.7 Overall Commentary on the Research Studies

The overall aim of this narrative literature review was to provide a coherent theoretical rationale for the main thesis hypothesis that self-compassion is a psychological factor which influences adjustment to MI. In order to achieve this aim, the review: (a) summarised empirical evidence underpinning understanding of bio-psycho-social factors implicated in adjustment to MI, and prognosis in coronary heart disease; (b) provided an overview, and critical evaluation, of Neff's theory of self-compassion and empirical evidence which currently supports the model. The following section provides an overall commentary on the research studies cited in the review, highlighting strengths and weaknesses of research methodology.

In relation to the literature which informs current understanding of adjustment to MI, an area of strength is the substantive number of large-scale longitudinal studies which have investigated the prospective relationship between depression, future cardiac events and premature mortality in MI patients. This empirical evidence has generated some agreement in the literature that those who have experienced MI have an elevated risk of depression compared with the general population, and that depression following MI prospectively predicts increased risk of cardiac events and premature mortality. Methodological limitations of the literature which inform understanding of the relationship between depression and MI include; (a) use of differing measures of depression and anxiety between studies; (b) failure of some studies to control for confounding factors, specifically, the effect of cardiac function impairment; (c) between-study differences in inclusion criteria; and (d) differences in time periods covered between studies. There is currently limited evidence regarding bio-psycho-social mechanisms which explain the relationship between coronary heart disease and depression. To date, no single study which has investigated adjustment post MI has incorporated a comprehensive range of bio-psycho-social factors. Importantly, although there is a theoretical rationale for predicting that self-

compassion influences post MI adjustment, the hypothesis has yet to be tested empirically.

In summary, methodological limitations of the self-compassion literature include a reliance on data collected from student samples (limiting generalisability of the findings) and many studies which have used a correlational design (precluding inferences about causality). An identifiable strength of the self-compassion literature is consistency between-studies in using the same psychometrically robust, and well validated, measure of self-compassion (the SCS), which has been developed from a coherent theoretical framework. However, the lack of an alternative, more objective measure of self-compassion can be considered a methodological limitation. There is substantial evidence that self-compassion is negatively correlated with depression and anxiety. However, to date, only a small number of studies have investigated the relationship between self-compassion and cognitive and behavioural aspects of adjustment to failure and adversity. In addition, there is, currently, only a small and newly emerging literature on the role of self-compassion in the context of poor physical health.

1.8 Aims and Hypotheses

Consistent with the broad aim of advancing a psychological understanding of adjustment to MI, a preliminary stage in the thesis involved investigating the relationship between cardiac function following MI (assessed using a measure of left ventricular ejection fraction, LVEF) and emotional adjustment (anxiety and depression). No specific predictions were made regarding the relationship between cardiac function following MI and emotional adjustment, due to inconsistencies in the literature (section 1.2). Demonstrating that poor emotional adjustment is not a by-product of worse cardiac function supports the theory that other psychosocial variables may mediate the relationship between cardiac damage and emotional adjustment. However, if poor emotional adjustment is associated with severity of impaired cardiac function, then self-compassion can only be considered as an important contributor of poor emotional adjustment if it explains variance in emotional adjustment, over and above that accounted for by cardiac impairment.

The second research aim was to advance understanding of the role self-compassion in the context of MI. Drawing on the research and theory discussed, the

thesis will test the following specific hypotheses regarding the role of self-compassion in adjustment following MI:

1) *Emotional Adjustment to MI*: Self-compassion is associated with better emotional adjustment (i.e. increased self-compassion is associated with lower levels of depression and anxiety symptoms and a reduced tendency to perceive that MI is having a negative emotional impact).

2) *Cognitive Representation of MI*: Self-compassion is associated with more adaptive illness beliefs, i.e. a more adaptive cognitive representation of cardiac illness.

3) *Behavioural response to MI*: As an initial exploration of the role of self-compassion in health behaviour following MI, we predicted that cardiac patients with higher levels of self-compassion are more likely to engage with cardiac rehabilitation, than those lower in self-compassion. The decision to opt in to cardiac rehabilitation was used as a measure of adaptive health behaviour.

CHAPTER 2: METHOD

2.1 Participants

Participants were recruited from the Cardiac Rehabilitation Service at Kings College Hospital. The key inclusion criterion was that individuals had been referred to the service following myocardial infarction. All participants fulfilled criteria for myocardial infarction, as diagnosed by a Cardiologist (and recorded on the patient medical records). The diagnosis of MI was also validated by the Specialist Cardiac Nurse. The only exclusion criterion was being unable to comprehend the questionnaires (e.g. where English was not understood). Of the 125 participants invited to take part in the study, 22 declined, 16 consented to take part in the research but did not return the questionnaires (see section 2.4, for details of the missing data protocol). Reasons for declining to take part in the research are displayed in Table 2.1.

The final sample comprised 87 participants. Of these, 63 were males (72%) and 24 females (28%), with a mean age of 60 years (range 31-90, SD = 12.32). The majority of the participants were White (67%), with other ethnic groups represented including Black Caribbean (8%), Black African (5%) and Asian Indian (5%). The majority of the sample were employed (40%) and retired (25%). Table 2.2 summarises the work status of the sample. Nearly two-thirds of the sample (n = 56, 64.4%) opted to participate in the cardiac rehabilitation program (reasons for opting out of cardiac rehabilitation are reported in section 3.6, Table 3.10).

Table 2.1

Reasons for Participants Opting out of Research

Reason for opting out of research	Number of participants
Dyslexic patient (refused cardiac nurse offer of help to complete questionnaires)	1
Patient terminally ill	1
Questionnaires too complex/difficult/overwhelming	3
Did not want to do it (no specific reason specified)	2
Did not engage with Cardiac Rehabilitation Service (Cardiac Nurses unable to contact)	1
No reason recorded	14

Table 2.2

Sample Work Status

Work Status	Frequency (%)
Employed	35 (40)
Unemployed	5 (6)
Retired	25 (29)
Permanently sick	8 (9)
Temporarily sick	8 (9)
Student	1 (1)
Missing data	5 (6)
Total	87 (100)

2.2 Power Analysis

An a priori power analysis was undertaken (using G Power application) to estimate the number of participants required to minimise risk of Type II error. For the purposes of estimating the required sample, the following assumptions were made: a medium effect size, ($f^2 = 0.2$), an alpha value of 0.01, seven predictor variables in the model (i.e. allowing for inclusion of all possible covariates in the hierarchical regression models). Findings from a previous study, which used a similar design (Neely et al., 2009), found a large effect size. However, a smaller predicted R^2 change, attributable to adding the self-compassion variable to the hierarchical regression model, was estimated for the present study, due to the potential inclusion of more control variables, likely to explain a greater proportion of shared variance in the dependent variables than in this previous study. It was estimated that a total sample of 62 would be required to give power (1-β) of 0.8 power and a total sample of 78 would be required to give 0.9 power.

2.3 Measures

Copies of the measures used in the study are included in Appendix 1.

Self-compassion scale (SCS; Neff, 2003a); The SCS is a 26-item scale which comprises six sub-scales assessing three positive components of self-compassion and three negative components: self-kindness (e.g. I try to be loving towards myself when I'm feeling emotional pain), self-judgment (e.g. I'm disapproving and judgmental about my own flaws and inadequacies), common humanity (e.g. I try to see my failings as part of the human condition), isolation (e.g. When I fail at something that's important to me, I tend to feel alone in my failure), mindfulness (e.g. When something

upsets me I try to keep my emotions in balance) and over-identification with feelings (e.g. When I'm feeling down I tend to obsess and fixate on everything that's wrong).

The SCS has previously demonstrated good internal consistency (Cronbach's α= .92), with internal consistencies of the sub-scales ranging from.75-.81 (Neff, 2003). In the current study, Cronbach's α for the SCS was .83, and internal consistencies for the sub-scales ranged between.71-.83.

The validity of the SCS measure was assessed in the following ways: (a) The content validity of the scale was demonstrated by assessing the relationship between the SCS total score and participant responses' to the question of whether or not they tended to be kinder to themselves or others (a scale was used in which -2 indicated that individuals were kinder to others than themselves, 0 indicated that they were equally kind to others and themselves and +2 indicated that they were kinder to themselves than others). As predicted, individuals highest in self-compassion tended to have middle range scores (study 1); (b) Construct validity of the scale was evaluated by; assessing the relationship between self-compassion and a number of other, more established scales that assess related constructs (self-criticism, social-connectedness and emotional intelligence). Statistically significant relationships between self-compassion and these related measures were obtained in the expected direction (i.e. higher self-compassion was associated with reduced self-criticism, increased social connectedness, and increased emotional intelligence). A further test of construct validity involved assessing the scale scores of two groups which should have different levels of self-compassion (Buddhist Monks and undergraduate students). As predicted the Buddhist monks scored considerably higher on the SCS than the undergraduate students. Construct validity of the SCS was evaluated further by evaluating the relationship between self-compassion and mental health outcomes (depression, anxiety and life satisfaction). As predicted the SCS was significantly negatively correlated with depression and anxiety and was significantly positively correlated with life satisfaction. Finally, in another study, self-report of self-compassion correlated with therapist report of self-compassion (Neff, et al., 2007); (c) Discriminant validity of the SCS was established by demonstrating that the scale was only moderately correlated with self-esteem - and that self-esteem, but not self-compassion, was correlated with a measure of narcissism. The SCS was not significantly correlated with the Marlowe-Crowne social desirability scale, which

indicated that the scale was not affected by social desirability bias. The scale also demonstrated good test-retest reliability (.93)

The scale has also demonstrated test-re-test reliability (.85-.93), which indicates that it is measuring a trait, rather than state, phenomenon.

Respondents indicate frequency of behaving in a certain manner using a 5-point scale, with scores ranging from 1 (almost never) to 5 (almost always). Negative scales are reverse scored so that higher numbers consistently indicate a higher level of self-compassion (i.e. higher numbers indicate reduced frequency of the negative component items). An overall mean score of all questionnaire items is computed.

*The Brief Illness Perception Questionnaire (Brief-IPQ, Broadbent et al., 2006);*The Brief-IPQ is an 8 item questionnaire which assesses individuals' perception of illness. Six items assess the cognitive representation of illness: (1) identity (how much do you experience symptoms from your illness?), (2) consequences (How much does your illness affect your life?); (3) treatment control (How much do you think your treatment can help your illness?); (4) personal control (How much control do you feel you have over your illness?); (5) timeline (How long do you think your illness will continue?); (6) cause (Participants are asked to rank order the 3 most important factors which caused their illness). Two items assess the emotional representation of illness: (1) How much does your illness affect you emotionally? (2) How concerned are you about your illness?

Answers are rated on a 10-point scale, with participants asked to select the number which best corresponds to their views. The Brief-IPQ was selected in place of the much longer IPQ-R (Moss et al., 2002) in order to minimise participant burden. Importantly, the scale has demonstrated good concurrent validity, with statistically significant correlations ($p < .001$) between all scale items and the corresponding IPQ-R sub-scale. Moreover, The Brief-IPQ has been used in a number of other studies which have investigated illness perceptions in cardiac patients, e.g. an investigation of the development of an illness perception intervention for myocardial infarction (Broadbent et al., 2009); a study of chest pain patients' response to exercise stress testing (Donkin et al., 2006); an examination of the role of illness perceptions in affect regulation (Vilchinsky, Dekel, Asher, Leibowitz, & Mosseri, 2012) and a study which investigated the association between illness perceptions, depression and quality of life in cardiac patients (Le Grande et al., 2012).

To facilitate interpretation items 3 (personal control), 4 (treatment control), 7 (comprehension), were reverse scored. Thus, for all items, higher values indicated a more negative illness perception (although as discussed later in the thesis the term negative does not necessarily denote that the illness perception is more maladaptive).

Hospital Anxiety and Depression Scale (HADS; Zigmond & Snaith, 1983) The HADS is a 14- item questionnaire which measures the symptoms of depression (seven items) and anxiety (seven items) in physically unwell individuals. Importantly, items which reflect symptoms of both emotional and physical disorder (e.g. dizziness and headaches) were purposely excluded from the questionnaire to avoid confounding. Participants rate symptom frequency on a four-point scale. The scale has been widely used in CHD research (for a review see, Herrmann, 1997). Previous analyses indicated that the HADS depression and anxiety sub-scale scores were highly correlated with independent psychiatrist assessments of depression and anxiety symptom severity (Zigmond & Snaith, 1983, $r = .70$, $p<.001$, correlation between HADS depression score and independent psychiatric rating of depression severity, $r = .74$, $p<.001$, correlation between HADS anxiety score and independent psychiatric rating of anxiety severity), and the sub-scales were therefore deemed to be justifiable measures of symptom severity. Because anxiety and depression were not statistically significantly correlated for a sub-group of patients ($n= 17$), Zigmond & Snaith (1983) concluded that the sub-scales assess different aspects of mood/anxiety disorder. The HADS sub-scales have previously demonstrated acceptable internal consistencies ($\alpha =$ 0.81-0.90 for the depression sub-scale, $\alpha =$ 0.80-0.93 for the anxiety sub-scales, Herrmann, 1997). In the current study internal consistency (Cronbach's α) for the HADS depression sub-scale was .85, and for the HADS anxiety sub-scale was .83.

Post MI Cardiac Function; Left ventricle ejection fraction measurement (LVEF), assessed by cardiac imaging, was used as a measure of post MI cardiac function. LVEF is computed by subtracting the end-systolic volume (volume of blood left in the ventricle at the end of a contraction) from the end-diastolic volume (volume of blood in the ventricle before a contraction), and dividing by the end-diastolic volume i.e. it is a measure of the fraction blood pumped out of the left ventricle with each heart beat. Where the proportion of blood pumped out of the left ventricle is $\geq 55\%$ then this is considered to be indicative of a normally functioning heart, values between the range of 45-54% LVEF are classified as a mild level of impairment,

values between the range of 36-44% are classified as a moderate level of impairment and LVEF ≤35% is considered to represent severe impairment in cardiac function. These cut-offs are based on the American Society of Echocardiography and European Association of Echocardiography guidelines (Lang et al., 2005). A 4-point scale was created to give an index of ejection fraction with a higher score indicating increased impairment (0 = ≥ 55%, i.e., normal function, 1 = 45-54%, mild impairment, 2 = 36-44%, moderate impairment, 3 = ≤ 35% = severe impairment). LVEF has been widely used in the depression in CHD literature to enable statistically controlling for disease severity (Frasure-Smith, Lesperance, & Talajic, 1993; van Melle et al., 2005).

Cardiac Symptom Severity; A brief self-report measure of cardiac symptoms (in the past seven days)was used to assess five key cardiovascular symptoms: (a) chest pain; (b) dyspnea (shortness of breath); (c) fatigue; (d) presyncope (light-headedness); (e) palpitations. Participants rated items on a 4-point scale, the response scale options were 0 (not at all), 1 (a little bit), 2 (moderately), 3 (quite a bit), 4 (extremely). This measure was developed for use in a previous study which investigated the relationship between cardio-vascular symptoms and emotional distress in patients with coronary artery disease (Ketterer et al., 2008). The scale demonstrated acceptable internal consistency, Cronbach's $\alpha = .81$.

Attendance at Cardiac Rehabilitation; A simple dichotomous measure indicating whether or not each participant attended cardiac rehabilitation was used as an opportunistic index of health behaviour. This information was recorded on each participant record.

2.4 Procedure

Data collection for the research was integrated into the routine data collection procedure within the Cardiac Rehabilitation Service. The specialist cardiac nurse verbally briefed potential participants about the research during a preliminary assessment meeting (using a pre-prepared script, Appendix 2). This meeting was scheduled within two weeks of discharge from hospital following MI, and either took place during a hospital clinic or a home-visit. Participants who expressed an interest in the research were given the participant information sheet and consent form (Appendix 3) and questionnaires (Appendix 1), in addition to the other questionnaires which are routinely collected by the service as part of a national dataset, during a

preliminary meeting with the Cardiac Rehabilitation Nurse. Participants were offered assistance completing the questionnaires as appropriate. A stamp addressed envelope was provided with the questionnaire pack and patients were given the choice of returning the questionnaires by post, or bringing them along when they attended their first cardiac rehabilitation class.The main cardiac nurse involved in recruitment recorded potential participant details on a paper register which was held in the cardiac rehabilitation office. This data was transferred (using an anonymous identifier) onto an electronic participant register, by the principal investigator, to facilitate monitoring recruitment. When a participant had consented to take part in the research but did not return the questionnaires, they were contacted, by telephone, after a period of three weeks (by the cardiac nurse or the principal investigator), and were then sent a duplicate pack of questionnaires if necessary. If the questionnaires were not returned following two phone calls, then a final reminder letter was sent, advising the participant that it would be assumed that they had opted out of the study if no response was received within the following four weeks.

2.5 Ethics

Ethical approval for the study was granted by the South East London Research Ethics Committee (REC reference number: 11/H0807/8). There were no ethical issues of concern to the committee. A copy of the approval letter is included in Appendix 4.

2.6 Data Cleaning

Data was entered on an SPSS database by the principal investigator. The dataset included the raw data and calculated scale scores (computed using SPSS syntax files).Data cleaning followed the protocol set out by Tabachnick and Fidell(2007; pp. 56-108). This involved examining descriptive statistics and graphic representations of all key study variables to assess whether these were within range, to consider the plausibility of means and standard deviations, and to assess whether the correlations between variables was in the expected direction. A *z*-score was computed for skew and kurtosis (by subtracting the mean of the distribution and dividing by the standard deviation of the distribution). Data was transformed where a *z*-score of > 2.58 was observed ($p < .01$) and the transformed variable was used in place of the non-normally distributed variable (Analyses with untransformed variables are included in Appendix 5, transformed variables were used in the main analyses due to standardised

residuals > 3 when the untransformed variables were used in the hierarchical regression models). In some cases, participants did not complete scales in full (no systematic missing data was identified). If <10% of the data for a scale was missing then non-missing items were used to infer the score of the missing value (the scale total divided by the number of completed items is imputed for the missing item(s) at that time point).Details of the missing data analysis are provided in Table 2.3.

Table 2.3

Missing Data Analysis

Scale	Number completed	% items missing from total completed	Number excluded due to >10% items missing	% data points mean substitution
SCS	81	0.02	2	.003
HADS Depression	87	0.02	2	.004
HADS Anxiety	87	0.02	4	0
Cardiac Function	73	n/a*	n/a	n/a
Cardiac Symptom Severity	71	0	0	0
Attendance at cardiac rehabilitation	87	n/a	n/a	n/a
IPQ1	83	n/a	n/a	n/a
IPQ2	81	n/a	n/a	n/a
IPQ3	83	n/a	n/a	n/a
IPQ4	83	n/a	n/a	n/a
IPQ5	83	n/a	n/a	n/a
IPQ6	83	n/a	n/a	n/a
IPQ7	82	n/a	n/a	n/a
IPQ8	83	n/a	n/a	n/a
Age	86	n/a	n/a	n/a
Gender	87	n/a	n/a	n/a

*n/a as single item measures

Missing data did not result in the statistical analyses being statistically under-powered; the minimum value of n = 62 participants (as described in section 2.2) was met or exceeded, for all of the analyses reported (n values for each statistical analysis are reported in the results section, Chapter 3).

2.7 Data Analysis Plan

Pearson correlation matrices were examined as a first step towards assessing the hypothesised relationships between the key study variables. Where the predicted, statistically significant association between the study variables was obtained (an alpha levelof 0.01 was set to allow for multiple testing), the next step involved computing hierarchical regression models in which covariates were entered at step 1 in the model, and in which self-compassion was entered at step 2. Only variables which were statistically significantly correlated with the criterion variable in the hierarchical regression model were included as covariates. SPSS diagnostics were examined to ensure that the hierarchical regression models were not biased due to multi-collinearity or the influence of outliers and residuals (diagnostics indicated that all VIF < 10, all tolerance statistic > .2 and there were no standardized residuals with an absolute value > .3) and that the assumption of independent errors was met (Durbin Watson = > 1 and < 3).

CHAPTER 3: RESULTS

3.1 Sample Characteristics

Clinical characteristics of the sample are displayed in Table 3.1. The majority of participants (89%, *n* = 77) had no previous history of MI. In terms of post MI cardiac function, over half of the sample (55.2%, *n* = 48) fell within the range of normal cardiac function to a mild level of impairment, based on the left ventricle ejection fraction measure (LVEF).

Table 3.1

Cardiac Function of the Sample

MI Severity	Number (%)
Normal	22 (25.3)
Mild impairment	26 (29.9)
Moderate impairment	19 (21.8)
Severe impairment	6 (6.9)
Missing data	14 (16.1)
Total	87 (100)

Note. Normal = ≥ 55% ejection fraction, Mild impairment = 45-54% ejection fraction, 36-44% = moderate impairment, ≤ 35% severe impairment.

Clinical characteristics of depression and anxiety at the time of assessment are displayed in table 3.2 and 3.3. Of the total sample, nearly one-third (32%, *n* = 28) scored above the cut-off for possible clinical depression, and over one-third (37%, *n*= 32) scored above the cut-off for possible clinical anxiety disorder (Scores >7 on the HADS questionnaire were classified as being within the clinical range, Zigmond & Snaith, 1983). However, the sample means for depressive symptoms (5.41) and anxiety symptoms (6.73) were below the cut-off for clinical disorder.

Table 3.2

Anxiety and Depression Severity By Diagnostic Category

Symptom Severity	Depression Symptoms Number (%)	Anxiety Symptoms Number (%)
Normal	57 (65.5)	51 (58.6)
Mild	18 (20.7)	17 (19.5)
Moderate	8 (9.2)	12 (13.7)
Severe	2 (2.3)	3 (3.4)
Missing	2 (2.3)	4 (4.6)

Note. Normal = Scores of 0-7 on the HADS sub-scale, Mild = Scores of 8-10 on the HADS sub-scale, Moderate = Scores of 11-14 on the HADS sub-scale, Severe = Scores of 15-21 on the HADS sub-scale.

Table 3.3

Descriptive Statistics

Variable name	Mean (SD)	Range	Z skewness	Z kurtosis
HADS Depression	5.41 (4.07)	0-19	2.92	.37
HADS Anxiety	6.73 (4.29)	0-18	2.33	-.17
Self-Compassion	3.36 (.65)	1.89-5	-.01	0.18
Illness beliefs				
Consequences	5.17 (2.57)	0-10	.031	-1.86
Timeline	7.20 (2.99)	1-10	-2.60	-1.54
Personal control	6.05 (2.71)	0-10	-2.05	-0.86
Treatment control	8.19 (1.90)	1-10	-4.99	4.04
Experience symptoms	3.66 (2.61)	0-9	0.61	-2.18
Concern	7.42 (2.19)	0-10	-2.98	-0.65
Comprehension	7.36 (2.37)	0-10	-2.97	0.24
Emotion	5.17 (3.17)	0-10	-0.92	-2.17
Cardiac symptoms	5.07 (4.13)	0-19	4.33	2.70

Note. HADS Depression = Depression sub-scale of the Hospital Anxiety and Depression Scale, HADS Anxiety = Anxiety sub-scale of the Hospital Anxiety and Depression Scale, Self-Compassion = Self-Compassion Scale total mean, Consequences = Item 1 of the Brief Illness Perception Questionnaire (IPQ1), Timeline = Item 2 of the Brief Illness Perception Questionnaire (IPQ2), Personal Control = Item 3 of the Brief Illness Perception Questionnaire (IPQ3), Treatment Control = Item 4 of the Brief Illness Perception Questionnaire (IPQ4), Experience symptoms = Item 5 of the Brief Illness Perception Questionnaire (IPQ5), Concern = Item 6 of the Brief Illness Perception Questionnaire (IPQ6), Comprehension = Item 7 of the Brief Illness Perception Questionnaire (IPQ7), Emotion = Item 8 of the Brief Illness Perception Questionnaire (IPQ8), Cardiac symptoms = Cardiac Symptom Checklist total score.

Table 3.4

Correlations Between Self-Compassion, Demographic Variables, Cardiac Variables, Anxiety and Depression

Variable	1	2	3	4	5	6	7
1. Age	-	.14	.29*	-.00	-.06	.03	-.06
n	86	86	72	70	78	84	82
2. Gender		-	-.01	.14	-.08	.10	.11
n		87	73	71	79	85	83
3. Cardiac function			-	.03	-.36**	.23	.07
n			73	62	66	71	69
4. Cardiac symptoms				-	-.25*	.45***	.38**
n				71	67	70	68
5. Self-compassion					-	-.40***	-.50***
n					79	77	76
6. Depression						-	.67***
n						85	83
7. Anxiety							-
							83

Note. Cardiac function = Left Ventricle Ejection fraction measure, Cardiac symptoms = Cardiac Symptom Checklist total score, Self-compassion = SCS total score, Depression = Depression sub-scale of the Hospital Anxiety and Depression Scale, Anxiety = Anxiety sub-scale of the Hospital Anxiety and Depression Scale

** p < .05, ** p < .01, *** p < .001*

3.2 Emotional Adjustment Following MI and Cardiac Functional Impairment

A preliminary step in the analyses involved examining the relationship between cardiac function (LVEF) and depression, and LVEF and anxiety (Table 3.4). If depression and anxiety following MI are not statistically significantly associated with an objective measure of cardiac function impairment, then this suggests that other psychosocial factors are involved in explaining variance in distress following MI. Consistent with this hypothesis, the relationship between LVEF and depression was not statistically significant (r = .23, p = .05), neither was the relationship between LVEF and anxiety statistically significant (r = .07, p = .58).Interestingly, a statistically significant positive correlation was obtained between self-compassion and cardiac function impairment (r = -.36, p< .01), i.e. higher levels of self-compassion were associated with reduced cardiac function impairment.

3.3 Hypothesis 1 (1): Relationship Between Self-compassion and Depression and Self-Compassion and Anxiety

A second step in the analyses involved examining associations (Pearson correlations) between self-compassion, demographic variables (age and gender), cardiac symptom severity, anxiety and depression (Table 3.4). As predicted, higher levels of self-compassion were associated with reduced symptoms of depression (r = -.40, p< .001), and anxiety (r = -.49, p = <.001). Next, two hierarchical regression models were computed, in which depression and anxiety were criterion variables respectively (Table 3.5). In each hierarchical regression model, cardiac symptom severity was entered, as a control variable, at step 1. Because age and gender were not correlated with depression or anxiety they were not included as control variables in either of the hierarchical regression models. Self-compassion was entered at step 2 in each model. Together, cardiac symptom severity and self-compassion explained a significant proportion of the variance in depressive symptoms, R^2= .31(R^2_{adj} = .28), and the overall model was statistically significant F(2, 63) = 13.91, p< .001. Self-compassion contributed to explaining 7% variance in depression, after controlling for cardiac symptom severity, which was approaching statistical significance at the conservative 0.01 level, β = -.13, t (63) = -2.53, p =.01. Together, cardiac symptom severity and self-compassion explained a significant proportion of the variance in anxiety symptoms, R^2= .32(R^2_{adj} = .30), and the overall model was statistically significant F(2, 61) = 14.53, p< .001. Self-compassion contributed to explaining 13%

variance in anxiety symptoms, after controlling for cardiac symptom severity, which was statistically significant, β = -2.21, $t(61) = -3.44$, p=.001).

Table 3.5

Summary of Hierarchical Regression Analyses: (a) Concurrent Relationship Between Self-compassion and Depression Controlling for Cardiac Symptom Severity, (b) Concurrent Relationship Between Self-compassion and Anxiety Controlling for Cardiac Symptom Severity

Variable	a)			b)		
	B	*SE B*	β	*B*	*SE B*	β
Step 1						
Cardiac symptoms	.48	.11	.49***	.40	.10	.44***
Step 2						
Cardiac symptoms	.42	.11	.42***	.30	.10	.33**
Self-compassion	-.13	.05	-.27*	-2.21	.64	-.38**
	Note: R^2= .24 for step 1, ΔR^2= .07 (p< .01) *N = 66*			*Note:* R^2= .19 for step 1, ΔR^2= .13 (p< .001) *N = 63 One case was deleted because an outlier variable was still detected when the HRM was computed using the transformed variables*		

** p < .05, ** p < .01, *** p < .001*

Table 3.6*Correlations Between Self-Compassion, Demographic Variables, Anxiety and Depression and Illness Beliefs*

Variable	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
1. Age	-	.14	.29*	-.001	-.06	.03	-.06	.29**	.13	.14	.08	.07	.06	-.03	.04
n	86	86	72	70	78	84	82	82	80	82	82	82	82	81	82
2. Gender		-	-.01	.14	-.08	.10	.11	-.08	-.002	.10	.09	.17	-.08	.02	.13
n		87	73	71	79	85	83	83	81	83	83	83	83	82	83
3. Cardiac Funct			-	.03	-.36**	.23	.07	.31**	.06	.22	.07	.14	.13	-.03	.10
n			73	62	66	71	69	69	67	69	69	69	69	68	69
4. Cardiac Sym				-	-.25*	.45***	.38**	.55***	.04	.41***	.30*	.73***	.36*	.21	.44***
n				71	67	70	68	70	68	70	70	70	70	70	70
5. Self-Comp					-	-.40***	-.50***	-.35**	-.11	-.32**	-.27*	-.23	-.20	-.13	-.47***
n					79	77	76	78	77	78	78	78	78	77	78
6. Depression						-	.67***	.51***	.18	.21	.15	.41***	.27*	.04	.35**
n						85	83	81	79	81	81	81	81	80	81
7. Anxiety							-	.32**	.16	.32**	.18	.30**	.33**	.06	.41***
n							83	79	77	79	79	79	79	78	79
8. Consequences								-	.19	.39***	.20	.57***	.27*	.11	.44***
n								83	81	82	82	82	82	81	82
9. Timeline									-	.11	-.01	.19	.26*	.16	.01
n									81	81	81	81	80	79	80
10. Personal Cont										-	.33**	.43***	.16	.24*	.24*
n										83	83	83	82	81	82
11. Treat Cont											-	.40***	-.09	.27*	.11
n											83	83	82	81	82
12. Exp Symp												-	.30**	.19	.41***
n												83		81	82
13. Concern													-	.004	.38***
n													83	81	82
14. Comp														-	.12
														82	81
15. Emotion															-
															83

Note. Cardiac Funct = Cardiac Function assessed using ejection fraction measure, Cardiac symptoms = Cardiac Symptom Checklist total score, Depression = Depression sub-scale of the Hospital Anxiety and Depression Scale, Anxiety = Anxiety sub-scale of the Hospital Anxiety and Depression Scale, Self-Comp = Self-Compassion Scale total mean, Consequences = Item 1 of the Brief Illness Perception Questionnaire (IPQ1), Timeline = Item 2 of the Brief Illness Perception Questionnaire (IPQ2), Personal Control = Item 3 of the Brief Illness Perception Questionnaire (IPQ3), Treatment Control = Item 4 of the Brief Illness Perception Questionnaire (IPQ4), Experience symptoms = Item 5 of the Brief Illness Perception Questionnaire (IPQ5), Concern = Item 6 of the Brief Illness Perception Questionnaire (IPQ6), Comprehension = Item 7 of the Brief Illness Perception Questionnaire (IPQ7), Emotion = Item 8 of the Brief Illness Perception Questionnaire (IPQ8).
** $p < .05$, ** $p < .01$, *** $p < .001$*

3.4 Hypothesis 1 (2): Relationship Between Self-compassion and Brief IPQ Items Which Assessed Emotional Representation of Cardiac Illness

Correlations between self-compassion and emotional representations of cardiac illness are displayed in Table 3.6. Self-compassion was significantly negatively correlated with one of the IPQ items which assessed the emotional representation of cardiac illness (IPQ8), $r = -.47$, $p < .001$, which indicated that lower levels of self-compassion were associated with an increased perceived emotional impact of MI. Self-compassion was not associated with the second IPQ item which assessed the emotional representation of illness (IPQ6), $r = -.20$, $p = .09$, which indicated that self-compassion was not related to perceived level of concern about cardiac illness. Next, a hierarchical regression model was computed to test whether the relationship between IPQ8 and self-compassion was maintained after statistically controlling for depression, anxiety and cardiac symptoms (Table 3.7).

Table 3.7

Self-Compassion and Beliefs About the Emotional Impact of Cardiac Illness (Emotional Impact, IPQ8): How Much Does Your Illness Affect You Emotionally?

Variable	*B*	*SE B*	B
Step 1			
Depression	1.26	1.43	.13
Anxiety	.19	.11	.25
Cardiac Symptom	2.44	1.22	.25
Step 2			
Depression	.63	1.32	.07
Anxiety	.10	.10	.14
Cardiac symptom	2.24	1.12	.23
Self-compassion	-1.86	.53	-.40**

Note:
$R^2 = .26$ for step 1, $\Delta R^2 = .13$
($p = .001$) N = 64
** $p < .05$, ** $p < .01$, *** $p < .001$*

Together, Depression, Anxiety and Cardiac Symptoms explained a significant proportion of the variance in beliefs about the emotional impact of cardiac illness (IPQ8), R^2= .26(R^2_{adj} = .23), and the overall model was statistically significant F(3, 60) = 7.19, p< .001. Adding self-compassion significantly improved the hierarchical model regression model, ΔR^2= .13, p = .001, and the overall model was statistically significant, F(4, 59) = 9.58, p< .001. The association between self-compassion and IPQ8 was statistically significant after controlling for shared variance with depression, anxiety and cardiac symptoms, β = -1.86, t(59) = -3.55, p<.01.

3.5 Hypothesis 2: Self-compassion and Cognitive Representation of MI

Self-compassion was negatively associated with beliefs about the consequences of cardiac illness (IPQ1), r = -.35, p< .01, i.e. higher levels of self-compassion were associated with a reduced tendency to perceive that cardiac illness is severely affecting one's life. Second, self-compassion was associated with lower scores on the personal control item (IPQ3), r= - .32, p<.01, which reflected an increased perception of having control over one's illness, r = - .32, p<.01. Self-compassion was not significantly associated with lower scores on the treatment control item (IPQ4), r = - .27, p= .02.Neither was self-compassion associated withperceptions about experiencing symptoms from cardiac illness (IPQ5), r = -.23, p= .05. Self-compassion was not significantly associated with perceptions about the duration of cardiac illness (IPQ2), r = -.11, p = .32. The relationship between self-compassion and beliefs about understanding of cardiac illness was not statistically significant, r = -.13, p= .27 (IPQ7). Next, hierarchical regression models were computed to test whether the observed relationship between self-compassion and the consequences (IPQ1) and personal control (IPQ3) items was retained after controlling for other variables which were correlated with these illness beliefs (Tables 3.8 and 3.9).

3.5.1 Self-compassion and Perception of Cardiac Illness Consequences

Table 3.8

Self-compassion and Beliefs About Cardiac Illness Consequences (IPQ1): How Much Does Your Illness Affect your Life?

Variable	*B*	*SE B*	B
Step 1			
Age	.03	.02	.11
Depression	2.72	1.25	.31*
Anxiety	-.05	.09	-.07
Cardiac Symptom	3.79	.96	.43***
Cardiac Function	1.57	.63	.28*
Step 2			
Age	.03	.02	.11
T1 Depression	2.86	1.25	.33*
T1 Anxiety	-.08	.09	-.12
Cardiac Symptom	3.79	.96	.43***
Cardiac Function	1.28	.67	.22
Self-compassion	-.57	.49	-.13

Note:
R^2= .53 for step 1, ΔR^2= .01
(p = n.s)
N= 54

Together, Age, Depression, Anxiety, Cardiac Symptoms and Cardiac function explained a significant proportion of the variance in the Consequences Illness belief (IPQ1), R^2= .53(R^2_{adj} = .49), and the overall model was statistically significant $F(5, 48) = 11.02$, $p < .001$. Adding self-compassion to the model did not explain any significant additional variance, although the overall model remained statistically significant, $F(6, 47) = 9.48$, $p < .001$. The association between self-compassion and IPQ1 was not statistically significant after controlling for shared variance with, depression, anxiety, cardiac symptoms and cardiac function, $\beta = -.57$, $t(47) = -1.17$, $p = .25$.

3.5.2 Self-compassion and Perception of Personal Control Over Cardiac Illness

Table 3.9

Self-compassion and Beliefs About Personal Control Over Illness (IPQ1): How Much Control Do You Think That You Have Over Your Illness?

Variable	*B*	*SE B*	B
Step 1			
Anxiety	.15	.07	.25
Cardiac symptom	2.11	.94	.28*
Step 2			
Anxiety	.11	.08	.19
Cardiac symptom	1.98	.94	.26*
Self-compassion	-.65	.47	-.1 7

Note:
R^2= .20 for step 1, ΔR^2= .03
(p = n.s) N = 64

Together, Anxiety and Cardiac Symptoms explained a significant proportion of the variance in beliefs about personal control of cardiac illness (IPQ3), R^2= .20(R^2_{adj} = .17), and the overall model was statistically significant $F(2, 61) = 7.41$, p = .001. Adding self-compassion to the model did not explain any significant additional variance, although the overall model remained statistically significant, $F(3,60) = 5.65$, p< .01. The association between self-compassion and IPQ3 was not statistically significant after controlling for shared variance with anxiety and cardiac symptoms, β = -.65, $t(60) = -1.39$, p = .17.3.6.3

3.6 Hypothesis 3: Self-compassion and Engagement With the Cardiac Rehabilitation Program

Reasons for dropping out of cardiac rehabilitation are displayed in Table 3.10.

Table 3.10

Reasons Participants Decided to Opt Out of Cardiac Rehabilitation

Reason for dropping out	Number (%)
Other commitment	5 (16.1)
Other program*	5 (16.1)
Too physically unwell*	4 (12.9)
Psychological reasons	6 (19.4)
Distance to travel to hospital	4 (12.9)
Not specified	7 (22.6)
Total	31 (100)

*Note. *It was agreed with the Cardiac Rehabilitation nurse that attendance at cardiac rehabilitation was not appropriate, at the point of assessment, for these participants*

Of those who opted out of the cardiac rehabilitation program (n= 31), nine were considered to have a "legitimate" reason for not participating because: (a) for some, following assessment with the cardiac specialist nurse, it was agreed that they would do a home program instead of attending cardiac rehabilitation (n = 5, 16.1%) and; (b) some individuals were too physically unwell to participate (including having restricted mobility, n= 4, 12.9%). Importantly, for these two groups of patients (n = 9) non-participation in cardiac rehabilitation was a joint decision between the cardiac specialist nurse and the patient. Therefore, this sub-group of participants were excluded from the next set of analyses, which compared those who decided to opt in to cardiac rehabilitation with those who decided to opt out (despite this being recommended by the cardiac specialist nurse).

Table 3.11

Relationship Between Study Variables and Opt in to Cardiac Rehabilitation

Variable	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
1. Age	-	.10	-.06	.21	-.04	.24*	.12	.16	.04	-.01	.04	-.05	.04	.01	-.02	-.28*
2. Gender		-	.12	.04	-.08	-.09	-.02	.08	.10	.15	-.13	-.02	.12	.05	.09	.01
3. Cardiac symp			-	.01	-.18	.54**	.03	.38**	.28*	.73***	.34**	.19	.41**	.44***	.36**	-.16
4. Cardiac funct				-	-.37**	.26*	.06	.23	-.03	.08	.16	-.03	.11	.29*	.14	-.19
5. SC					-	-.33**	-.13	-.29*	-.22*	-.18	-.16	-.08	-.44***	-.39**	-.49***	.23
6. Conseq						-	.17	.38**	.16	.54***	.25*	.13	.44***	.53***	.36**	-.21
7. Timeline							-	.10	-.04	.15	.26*	-.14	.03	.16	.17	-.06
8. Personal Cont								-	.31**	.41***	.13	.23	.22	.19	.27*	-.17
9. Treat Cont									-	.36**	-.10	.24*	.11	.15	.20	-.25*
10. Exp Symp										-	.28*	.18	.41***	.40**	.31**	-.03
11. Concern											-	-.01	.36*	.24*	.32**	.05
12. Comp												-	.09	.01	.03	.11
13. Emotion													-		.41***	-.01
14. Depression															.68***	-.12
15. Anxiety															-	-.03
16. Opt in to Rehab																-

Note. Cardiac symptoms = Cardiac Symptom Checklist total score, Cardiac Imp = Cardiac Impairment assessed using ejection fraction measure, Self-Compassion = Self-Compassion Scale total mean, Depression = Depression sub-scale of the Hospital Anxiety and Depression Scale, Anxiety = Anxiety sub-scale of the Hospital Anxiety and Depression Scale. Conseq = Item 1 of the Brief Illness Perception Questionnaire (IPQ1), Timeline = Item 2 of the Brief Illness Perception Questionnaire (IPQ2), Personal Cont = Item 3 of the Brief Illness Perception Questionnaire (IPQ3), Treat Cont = Item 4 of the Brief Illness Perception Questionnaire (IPQ4), Exp Symp = Item 5 of the Brief Illness Perception Questionnaire (IPQ5), Concern = Item 6 of the Brief Illness Perception Questionnaire (IPQ6), Comprehension = Item 7 of the Brief Illness Perception Questionnaire (IPQ7), Emotion = Item 8 of the Brief Illness Perception Questionnaire (IPQ8).
*N = 62-87*due to missing data

Correlations between opt in to cardiac rehabilitation and other factors likely to influence engagement (age, gender, cardiac symptom severity, cardiac function, illness perceptions, depression, anxiety, e.g. Casey et al., 2008; French, Cooper, & Weinman, 2006) and self-compassion are displayed in Table 3.11. The point-biserial correlation (a special case of Pearson's correlation) was used to evaluate the relationship between attendance at cardiac rehabilitation and the other study variables, (the correlation was calculated using Pearson's correlation in SPSS). Attendance at cardiac rehabilitation was a dichotomous variable (a coding scheme was used in which 0 = did not opt in to cardiac rehabilitation and 1 = opted in to cardiac rehabilitation). The point-biserial correlation is the appropriate statistical test to use when one variable is a true dichotomous or binary variable and the other variable is continuous (Everitt, 2002). The relationship between self-compassion and opt in to cardiac rehabilitation was not statistically significant (p = .05). Neither was opt in to cardiac rehabilitation was not statistically significantly associated with the other variables likely to influence engagement at the 0.01 level.

4. CHAPTER 4: DISCUSSION

4.1 Summary of Results

The overarching thesis aim was to advance understanding of psychological factors in adjustment to MI. A first step towards achieving this aim involved demonstrating dissociation between functional cardiac impairment and emotional distress in a sample of individuals recovering from MI. Consistent with findings from a number of previous studies (Carney et al., 2003; Frasure-Smith et al., 1995; Strik et al., 2004; Strik et al., 2003), more severe functional cardiac impairment (assessed using left ventricular ejection fraction) was not significantly associated with increased distress (depression or anxiety) in the present study sample. Conversely, subjective experience of cardiac symptoms was associated with increased depression and anxiety, and was included as a covariate in subsequent analyses. Importantly, this observed absence of relationship between functional cardiac impairment and distress indicates that other bio-psycho-social factors contribute to fuelling negative emotions following MI. Having ascertained that depression and anxiety following MI are not a by-product of cardiac function impairment, a second step involved examining the relationship between self-compassion, a psychological factor known to confer resilience responding to adversity in relation to non-health related events (Neff et al., 2007, Neff & McGhee, 2010, Neff et al., 2005), and emotional adjustment following MI. Results from three separate analyses were consistent with the hypothesis that self-compassion is associated with better emotional adjustment following MI; First, self-compassion contributed to explaining 13% ($p < .01$) additional variance in anxiety; Second, there was a trend whereby increased self-compassion was associated with reduced depressive symptoms, self-compassion contributed to explaining 7% ($p = .01$) additional variance in depressive symptoms; Third, self-compassion was associated with a reduced tendency to perceive that MI is having a negative emotional impact, assessed using the Brief Illness Perceptions Questionnaire (Brief-IPQ, 13% variance explained, $p < .01$). Self-compassion was not associated with a fourth index of emotional adjustment, the tendency to be concerned about cardiac illness.

A third step involved investigating the relationship between self-compassion and cognitive representations of cardiac illness. After controlling for other factors which were associated with cognitive representation of cardiac illness, self-

compassion was not associated with any of the Brief IPQ items which assess the cognitive representation of illness: (a) perceived consequences of cardiac illness (controlling for age, depression, anxiety, cardiac symptoms and cardiac function); (b) perceived personal control over cardiac illness (controlling for anxiety and cardiac symptoms); (c)perception that treatment can help with cardiac illness; (d) perception of experiencing symptoms of cardiac illness; (e) perception of understanding cardiac illness. In sum, the results indicate that self-compassion is not directly related to cognitive representations of cardiac illness. A final step involved evaluating the relationship between self-compassion and engagement with cardiac rehabilitation program, which was used as a simple and opportunistic index of adaptive health behaviour. Higher levels of self-compassion were not associated with an increased tendency to opt in to cardiac rehabilitation (r = .23, p = .05).

4.2 Theoretical Implications

The present study was the first study to examine the relationship between self-compassion and emotional distress following MI. The findings are broadly consistent with recent theorising regarding the protective role of self-compassion in adjustment to health events and illness (Terry & Leary, 2011). The relationship between self-compassion and anxiety and depression in this older sample of individuals recovering from MI was similar to the previously reported relationship between self-compassion and anxiety and depression in a younger sample of undergraduate students (Neff, 2003a). Thus, the observed protective benefits of self-compassion in minimising the emotional impact of adverse events, as outlined in Neff's (2003a, 2003b) theory, appear to apply across the life-span, and to relate to coping with health events, in addition to academic and interpersonal events as previously demonstrated (Leary et al., 2007; Neff et al., 2005).

The following section discusses theoretical implications of the thesis findings; this includes a consideration of the application of Neff's (2003a, 2003b) theory of self-compassion to understanding adjustment to MI, and exploring links between Neff's theory and theoretical models which inform a psychological understanding of physical health difficulties, namely the cognitive ABC model of distress (Ellis, 1962; 1994, Chadwick, Birchwood & Trower), Leventhal's (1970) self-regulatory model of health behaviour, Gilbert's theory of self-compassion and emotional regulation

(Gilbert, 2010), and qualitative research which has investigated the subjective meaning of adjustment to MI (Johnson & Morse, 1990).

4.2.1 The Role of Self-Compassion Within a Cognitive Conceptualisation of Adjustment to MI

The findings that; (a) cardiac function following MI is not associated with depression and anxiety symptoms and; (b) increased self-compassion is associated with reduced anxiety and depression following MI, can be understood with reference to the cognitive ABC model of distress (Chadwick, 2006; Ellis, 1962, section 1.2.2). If this cognitive model of distress is applied to understanding adjustment to MI (a distressing event), then it predicts that the physical impact of MI (i.e. cardiac function) should not determine emotional distress following MI (i.e. C in the model), because the emotional consequences of MI are mediated by cognitive factors (Figure 2).

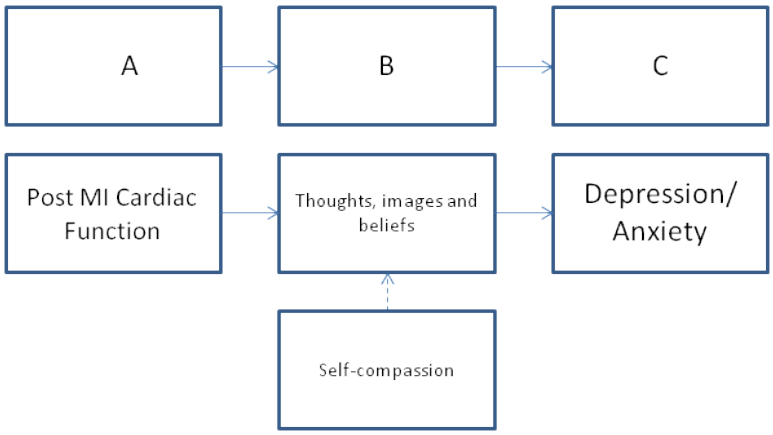

Figure2. ABC model of adjustment to MI.

As predicted by the ABC model, there was no direct A→C relationship in this study (using cardiac function as a measure of the physical impact of MI, i.e. the A in the ABC model), and self-compassion was associated with a reduced negative emotional impact of MI, (i.e. increased self-compassion was associated with reduced depression and anxiety, i.e. C in the ABC model). Interestingly, self-compassion was not associated with items on the Brief IPQ which assessed the cognitive representation of cardiac illness (which can be conceptualised as being part of the "B" in the ABC model), after controlling for other factors. Given that self-compassion was associated with C in the ABC model, and given that C is a consequence of B, this

raises the question of what is the relationship of self-compassion to B and C in a cognitive ABC conceptualisation of adjustment to MI.

Neff's theory provides a useful starting point for theorising the role of self-compassion in a cognitive conceptualisation of adjustment to MI. In summary, Neff (2003b) proposed that self-compassionate individuals experience less negative affect responding to adversity because: (a) they are non-judgmental making sense of what has happened, and treat themselves with kindness; (b) they conceptualise their difficulties as being part of the human condition, rather than being isolated and caught up in self-pity; (c) they take an equilibrated, mindful stance, rather than over-identifying with or repressing emotions. Given that self-compassion is, fundamentally, a mode of relating to oneself which is characterised by low self-judgment, (Neff, 2003) it follows that self-compassion will influence self-referential thoughts responding to MI. Therefore, the lack of association between self-compassion and cognitive items on the Brief IPQ might not indicate that self-compassion is uninvolved in the thoughts, images and beliefs that occur following MI, but rather suggests that self-compassion is specifically associated with self-referential thoughts following MI. Consistent with the hypothesis that self-compassion influences self-referential thinking, previous experimental results (Leary et al., 2007) demonstrated that when people (students) were induced to be self-compassionate, before thinking about a negative life-event from their past, this resulted in reduced self-critical thinking and reduced negative affect (compared to a self-esteem induction, writing control and completion of dependent measures only).

A second possibility regarding the relationship of self-compassion to thoughts, images and beliefs following MI (i.e. B in the ABC model), is that this adaptive mode of relating to oneself influences the way in which people respond to cardiac stimuli. Neff's theory predicts that when people are self-compassionate they are able to take a step back and adopt an objective perspective, rather than over-identifying with or repressing difficult feelings. Consistent with the hypothesis that this self-compassionate mindful mode of relating to one's thoughts and feelings facilitates emotional adjustment following MI, findings from a number of studies indicate that mindfulness meditation facilitates emotion regulation (for a review see Chambers, Gullone, & Allen, 2009).Thus, an individual might perceive that cardiac illness will

have serious consequences (independent of whether or not they are self-compassionate), but whether or not that cognition triggers depression and anxiety could reflect how that thought is related to, i.e. with a self-compassionate mindful awareness versus over-identification with negative feelings.

4.2.2 Self-Compassion and Emotional Processing

The finding that self-compassion was associated with a reduced negative emotional impact of MI raises the question of how self-compassion influences the processing of emotion in response to cardiac stimuli. As outlined previously (section 1.2.2), Leventhal (1970, Leventhal et al., 1992) conceptualised the cognitive representation of health threat stimuli and the representation of emotion as being distinct processing systems which, relatively independently, influence how people respond to health threat stimuli. The finding that self-compassion was not associated with Brief IPQ items which evaluated cognitive representation of threat (i.e. perceived duration of cardiac illness, perceptions of personal and treatment control, perceived experience and understanding of illness), after controlling for cardiac symptom severity, suggests that self-compassion is associated predominately with the representation of emotion in response to health threat.

Leventhal conceptualised a hierarchy of emotion processing: (a) sensory motor processing, which describes simple innate reflexes, such as the emotional response of newborn infants, not linked to past experiences or specific environmental stimuli; (b) schematic processing, which describes rapid and automatic processing of stimuli, similar to a conditioned response, derived from repeated past experiences, e.g. repeated loving or angry encounters with a parent; (c) conceptual processing, which is voluntary and effortful and which makes use of a propositional/semantic memory network (i.e. memory about illness), permitting more flexible and thoughtful response to emotional experience. Leventhal proposed that non-verbal, perceptual memory structures, associated with schematic processing, are most strongly linked to affective experience, whereas the cognitive representation of illness (i.e. labelling illness states and reasoning about them) is most strongly associated with propositional memory. This raises the possibility that self-compassion influences the processing of MI stimuli at the schematic level.

The idea that self-compassion influences schematic processing is consistent with Gilbert's (2010) proposal that self-compassion is associated with a distinct affect regulation system, labelled the "self-soothing" system, which evolves from early attachment experiences. Gilbert theorised that, in psychologically healthy individuals, the self-soothing system functions to down-regulate the threat regulation system, attenuating negative emotions. Consistent with this theoretical conceptualisation, findings from a range of studies indicate that self-compassion is associated with a specific physiological and neurological response characterised by increased heart rate variability, reduced production of cortisol (Rockliff et al., 2008), release of oxytocin (Gilbert, 2010) and activation of regions of the brain associated with the retrieval of emotional and autobiographical memory, and the monitoring of internal states connected to emotional experience (Longe et al., 2010). The observed relationship between self-compassion and reduced negative emotional impact of MI in the current study likely reflects the outcome of this complex physiological response.

Another route through which self-compassion might minimise the negative emotional impact of MI and persisting cardiac symptoms is by facilitating a shift from automatic schematic processing of cardiac stimuli to a more self-reflective conceptual processing mode via increased mindful awareness (i.e. as discussed previously self-compassion might influence how people respond to thoughts, beliefs and images related to MI). Leventhal theorised, and subsequently demonstrated in a series of experimental studies (Leventhal, 1982), that paying careful attention to aversive stimuli (e.g. such as unpleasant cardiac symptoms) facilitates experiencing stimuli as "objective events" and that this reduces distress associated with aversive physical sensations. Neurological findings of increased insula activation when individuals engage in self-reassurance (i.e. a self-compassionate response) are consistent with theorising that self-compassion promotes mindful-awareness (Neff, 2003), because this part of the brain is associated with self-reflection and ascending internal body signals (Longe et al., 2010).

It is noteworthy that, although self-compassion was associated with a reduced perception of being "affected emotionally" by cardiac illness (one item on the Brief IPQ which assessed the representation of emotion in response to MI), it was not associated with a second item, which is also intended to evaluate the representation of

emotion, and which assesses the extent to which individuals are "concerned about" cardiac illness. One reason for this seeming discrepancy could be that the Brief IPQ item which evaluates "being concerned" about cardiac illness is accessing a conceptual level of processing ("knowing with the head", Barnard & Teasdale, 1991, p.24) which is influenced by semantic knowledge, rather than, self-compassion related, schematic processing (i.e. "knowing with the heart" Barnard & Teasdale, 1991, p.24).

4.2.3Self-Compassion and The Subjective Experience of MI

Johnson & Morse (1990) proposed that adjustment to MI is a process characterised by a struggle to regain control over one's life (Figure 3). From transcriptions of interviews with individuals (*N* =14) referred to a cardiac rehabilitation program or cardiac self-help group following MI, (grounded theory approach), they extrapolated common features of the adjustment process which they divided into the stages of "coming to terms" with MI, "learning to live" and finally "living again". The following section considers how self-compassion might influence the stages of adjustment following MI conceptualised by Johnson & Morse.

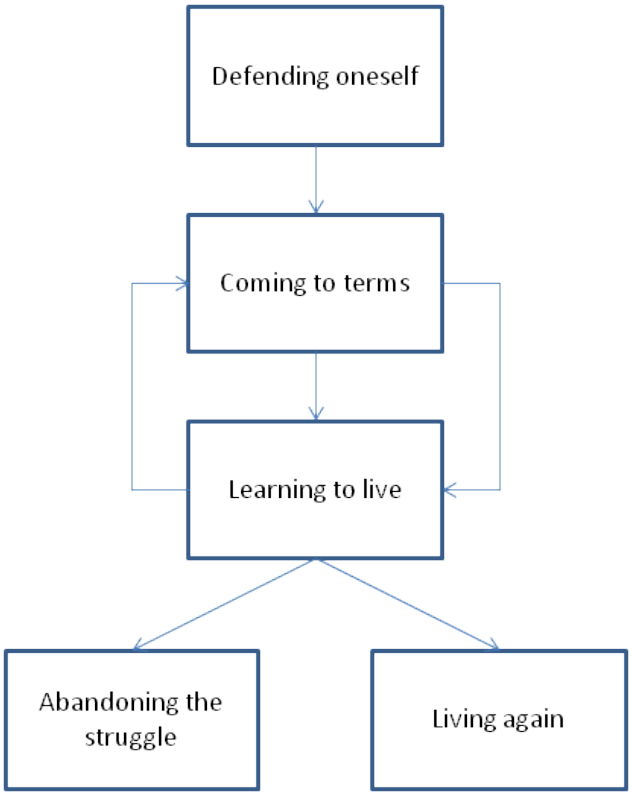

Figure3. Process of adjustment to MI (Johnson & Morse, 1990)

Johnson & Morse found that coming to terms with MI involved thinking about the possibility of one's own death, seeking causal explanations for MI and thinking about one's limitations and future plans. A number of ways in which self-compassion could influence the different elements of "coming to terms" with MI can be proposed; (a) self-compassionate individuals may be less susceptible to being overwhelmed by anxiety confronting existential concerns, than those low in self-compassion, due to adopting a balanced mindful perspective; (b) individuals who are low in self-compassion may be especially susceptible to guilt and shame, thinking about causal explanations for MI, because this process could activate self-judgment; (c) responding to MI with self-compassion could facilitate thinking about the future and planning lifestyle changes, because being self-compassion provides the "emotional safety" to see the self clearly and to take necessary actions to enhance well-being (Neff, 2003b, p.87).

Johnson & Morse found that, for some, MI undermined their confidence and self-worth. Being self-compassionate could facilitate preserving a sense of self and making role transitions post MI because, for those who are high in self-compassion, self-worth is not contingent upon social status, attainment or positive evaluation from others, i.e. for self-compassionate individuals self-worth is independent of specific social roles (Neff et al., 2005). Conversely, for those low in self-compassion, giving up valued social roles could trigger self-judgment and activate underlying negative self-related beliefs (e.g. perceptions of being physically weak, impotent or incapable). Activation of negative self-beliefs following MI could, in turn, interfere with adaptive help-seeking behaviour (e.g. for an individual whose self-worth is contingent upon others perceiving that they are physically strong and capable, asking for help with tasks of daily living could be difficult), and might also trigger unhelpful compensatory behaviours (e.g. Johnson & Morse cited the example of men who wanted to "set the record straight unwisely demonstrating that they were capable of manly tasks such as lifting a heavy box or shovelling snow"). Findings from a recent study which demonstrated that higher levels of self-compassion are associated with increased willingness to use assistive devices, in older adults, support the hypothesis that self-compassion facilitates making role transitions in response to physical limitations (Batts Allen et al., 2012).

In order to regain control of their lives following MI, individuals engage in a range of strategies including goal setting, making comparisons with others who have had a heart attack, seeking reassurance from health professionals and learning about their heart condition which are focused on minimising uncertainty. As noted elsewhere (Neff et al., 2005; Terry & Leary, 2011) self-compassion enhances effective self-regulation, and might therefore be implicated in this phase of "minimising uncertainty" following MI. Interestingly, self-compassion was not associated with having a better understanding of cardiac illness in the current study (an adaptive strategy for re-gaining control of one's life). This could reflect that gaining an understanding of cardiac illness in the early stages of recovery post MI (and prior to engagement in cardiac rehabilitation), is too overwhelming and anxiety provoking for some individuals, e.g. for some individuals in Johnson and Morse's study acquiring information resulted in unhelpful hyper-vigilance to unfamiliar body sensations.

For many, engagement in cardiac rehabilitation represents an important step towards "learning to live" following MI. Given the established health benefits of engaging in cardiac rehabilitation (Williams et al., 2006), it was predicted that higher levels of self-compassion would be associated with an increased tendency to opt in to the programme, because, for self-compassionate individuals physical health is a highly valued goal (Neff, 2003b). Self-compassion was not statistically significantly associated with an increased tendency to engage with cardiac rehabilitation. The lack of a statistically significant relationship between self-compassion and the tendency to engage in cardiac rehabilitation could reflect a tension between being self-compassionate towards oneself and doing what is, objectively, optimal for one's physical health, in the recovery period after MI. Whilst taking "whatever actions are needed - even if painful or difficult – in order to further one's well-being" (Neff, 2003b, p.88) might, unequivocally, be the self-compassionate route amongst physically healthy individuals, this is perhaps less clearly the case amongst those who are older, frail and/or more physically unwell. For some, the disadvantages of attending cardiac rehabilitation (e.g. psychological distress associated with being in a group, stress and exhaustion associated with travelling a long distance to get to the hospital) might outweigh the benefits of attending at this early stage in the recovery process. Moreover, the validity of using attendance at cardiac rehabilitation as a

behavioural measure of adjustment to MI is limited, because it cannot be precluded that some of the individuals who opted out of cardiac rehabilitation at the point of assessment subsequently re-engaged at a later stage in their recovery.

The final stage in the process of adjustment to MI identified by Johnson & Morse (1990), labelled "Living again" is characterised by accepting limitations and refocusing attention onto other aspects of one's life. This contrasts to "abandoning the struggle", characterised by failure to adjust after MI and giving up trying to regain control over one's life. The current study findings leave unresolved the relationship between self-compassion and this stage in the process of adjustment, because the study participants would not yet have begun stage 3 of the process (i.e. prior to engagement in cardiac rehabilitation) at the point of assessment. However, it can be speculated that self-compassionate individuals will be less likely than those low in self-compassion to abandon the struggle and will be more likely to regain control over their lives because, fundamentally, "the care intrinsic to compassion should provide a powerful motivating force for growth and change" (Neff, 2003b, p. 87).

4.2.4 Theoretical Implications Summary and Considerations

The present study results provide preliminary evidence that Neff's theory of self-compassion can be applied to understanding adjustment to MI. The study results indicate that: (a) self-compassion is associated with reduced negative emotional impact of MI; (b) self-compassion is not related to cognitive representations of cardiac illness (i.e. one specific dimension of the "B"). A number of routes, which are not mutually exclusive, via which self-compassion influences the emotional experience of MI have been hypothesised. In summary: (a) self-compassionate individuals experience less negative affect following MI than those low in self-compassion due to experiencing fewer self-critical thoughts; (b) self-compassion is associated with a specific, automatic, "schematic processing mode" (derived from past experiences of care and nurturance, i.e. activation of the self-soothing affect regulation system) in response to MI which minimises negative emotions; (c) self-compassion facilitates shifting from an automatic schematic processing of cardiac stimuli to a more self-reflective conceptual processing mode via increased mindful awareness.

Further experimental research is required to empirically evaluate how self-compassion influences cognitive mediation of experienced cardiac stimuli. For example, a study could be undertaken to investigate whether inducing people to be self-compassionate (e.g. using the self-compassion induction devised by Leary et al.) influences the content of thinking about MI. Another study could investigate whether self-compassion influences how people attend to cardiac stimuli. If self-compassionate individuals respond to cardiac stimuli with mindful awareness (indicative of good cognitive control and low automaticity or impulsivity of responses, Moore, Gruber, Derose, & Malinowski, 2012), as is predicted by Neff's theory, then it follows that they would exhibit less of an attentional bias towards cardiac threat stimuli, e.g. less interference on a modified Stroop task, than those low in self-compassion. Finally, it would be interesting to compare neurological and physiological responses of those high and low in self-compassion responding to cardiac stimuli, to investigate whether self-compassion influences how people process cardiac stimuli.

An important factor which needs to be taken into account applying Neff's theory of self-compassion to understanding adjustment to MI is the dynamic, temporal, nature of the recovery process, because adjustment to MI is a process with distinct stages related to regaining a sense of personal control. It remains a possibility that self-compassion will influence thoughts, feelings and behaviour differently at different points in this process of regaining control of one's life following MI. For example, following MI and prior to starting cardiac rehabilitation, attributing responsibility externally could be an adaptive strategy which could bolster an individual's confidence that the cardiac nurse is correct regarding benefits of engaging in cardiac rehabilitation, outweighing their personal fears about the danger of exercising. Further longitudinal research is warranted to evaluate the role of self-compassion over the course of the adjustment process.

An interesting research question relates to the extent to which perceptions of personal control over cardiac illness and treatment control can be considered adaptive and how specific beliefs about personal control and treatment control influence the process of regaining control of one's life. In the current study, self-compassion was not related to having an increased perception of personal control over one's cardiac

illness, neither was self-compassion associated with an increased perception that treatment can help with illness, after controlling for other factors. These findings are consistent with the hypothesis that self-compassion facilitates acceptance of one's limitations, a feature of "coming to terms" with MI, rather than fuelling over-optimistic and unrealistic expectations. Fundamentally, CHD is a progressive disease with an increased likelihood of MI, therefore both very low and very high scores on the Brief IPQ items assessing perceptions of personal control and treatment control can be considered unhelpful. Whereas a very low perception of personal control could indicate that an individual will have difficulties adhering to proposed treatment regimens and taking responsibility for making lifestyle changes, very high scores could denote that the individual has unrealistic expectations about recovery following MI, which could also have adverse consequences.

Another important factor which needs to be taken into account considering the relationship between self-compassion and taking control of cardiac illness is "control potential" (Bailis, Segall, & Chipperfield, 2010). The tendency to perceive that one has personal control must be balanced with an objective evaluation of the extent to which control is possible. Indeed, where an individual's perception of control exceeds their "control potential" then this could result in adopting unsafe or unrealistic health goals and/or difficulties in goal disengagement in situations that cannot be improved. The concept of "control potential" is relevant to understanding goal regulation in any context, but is likely to be especially relevant in the context of CHD, where goal setting must take account of an individual's physical limitations, and the progressive nature of the disease. Given that self-compassion promotes adaptive goal regulation in a non-health (academic) context (Neely et al., 2009; Neff et al., 2005), it is plausible that self-compassion will promote a healthy equilibrium between perceptions of control and "control potential" responding to MI.

Interestingly, the finding that self-compassion is not associated with an increased perception of control (after controlling for anxiety and cardiac symptoms) is consistent with findings from another recent study (Terry et al., Manuscript in preparation) in which self-compassion was not associated with an internal health locus of control (defined as the tendency for people to attribute health changes to their own efforts) explaining health changes, but was significantly associated with "powerful

others" health locus of control (i.e. tendency to attribute health changes and outcomes to doctors). Together, these preliminary results suggest that the relationship between perceptions of personal control (i.e. internal locus of control) and self-compassion may be more complex in the context of a serious physical health event, (such as MI), compared to other non-health related, life-events.

The present study finding that higher levels of self-compassion are associated with reduced negative emotional impact following MI contributes to the substantive evidence base which is consistent with Neff's proposal that self-compassion buffers against the negative emotional impact of adversity. Given the less substantive evidence-base within which to contextualise the current study findings regarding the relationship between self-compassion and cognitive and behavioural aspects of adjustment to MI, drawing conclusions about these, novel, findings must be somewhat more tentative. Importantly, the results warrant replication before firm conclusions can be drawn. As discussed previously, a limitation of the current self-compassion literature is a lack of empirical data regarding hypothesised relations between the sub-components of self-compassion (Barnard & Currey, 2011; Neff 2003a; Neff 2003b). Consistent with Neff's (2003a) recommendation, and in line with the existing self-compassion literature, the current study utilised the total self-compassion score. However, future, larger scale, studies might usefully extend the current study findings investigating the relationship between the different components of self-compassion and adjustment to MI, informing a more detailed understanding of which specific aspects of self-compassion influence post MI adjustment.

4.3 Clinical Implications

Thefollowing section considers clinical implications of the thesis findings, and outlines ways in which psychological work with individuals post MI might incorporate a consideration of self-compassion. Developing efficacious psychological interventions to facilitate adjustment following MI is important, because depression and anxiety following MI are common, and are associated with a particularly poor prognosis, including increased risk of future cardiac events (de Jonge et al., 2006) and mortality (Barth et al., 2004; Dickens et al., 2008b; van Melle et al., 2004). In addition, whilst existing psychological interventions have demonstrated efficacy

treating anxiety and depression in MI, there is scope for improvement, because the pooled effect size from a recent systematic review indicated that effect sizes from previous treatment studies are small to moderate, (Whalley et al., 2011).

The current study finding that self-compassion was associated with reduced negative emotional impact following MI represents a necessary, but only preliminary, step towards demonstrating empirically that self-compassion focused interventions can facilitate post MI emotional adjustment. Nonetheless, given that previous study findings have evidenced a causal relationship, i.e. self-compassion focused interventions have significantly reduced negative affect in, physically healthy, depressed individuals (Gilbert & Proctor, 2006, Kuyken et al., 2010) compared to control conditions, it is plausible that a self-compassion focused approach could have clinical utility working with those who are experiencing high levels of anxiety and depression following MI.

The current study results were not conclusive regarding the relationship between self-compassion and health behaviour following MI. However, it would be premature to conclude that self-compassion does not influence health behaviour. Findings from one previous study demonstrated that a self-compassion based intervention was effective in helping people, who wanted to quit, stop smoking (compared to a monitoring control condition, Kelly et al., 2010). If a self-compassion based intervention is effective in the context of smoking cessation, then it follows that this same approach could be usefully applied within the context of cardiac rehabilitation, because reducing unhealthy behaviours, e.g. smoking, excessive alcohol intake and unhealthy eating, is often an important goal of cardiac rehabilitation. A limitation of the current study was its inclusion of just one, simple, behavioural measure, assessed at only one time point. Thus, the current study results leave unresolved whether self-compassion influences other health behaviours following MI. Nonetheless, in light of other findings, which indicate that self-compassion promotes problem focused coping (Neff et al., 2004) and behavioural equanimity (Leary et al., 2007), it is plausible that increasing self-compassion will facilitate appropriate goal setting in the context of cardiac rehabilitation. Self-compassionate individuals might also be less susceptible to being overwhelmed with self-criticism and negative affect following set-backs in cardiac rehabilitation, and might have less reluctance asking for help. Further

research is required to more fully explore how self-compassion influences a spectrum of relevant health behaviours, across the course of the adjustment process following MI.

An interesting finding was that higher levels of self-compassion were associated with significantly lower levels of cardiac function impairment post MI. The influence of self-compassion on cardiac function impairment could be due to a direct physiological effect of being self-compassionate (e.g. increased heart rate variability and/or reduced cortisol, the focus of Gilbert's theorising), but might also reflect that self-compassionate individuals have better baseline health prior to MI due to leading healthier lifestyles (as predicted by Neff's, 2003a, 2003b theory). This finding of an association between self-compassion and cardiac function impairment post MI warrants replication, including investigation of whether self-compassion is associated with other indicators of MI severity (e.g. length of hospital stay, prescription of warfarin and scores on the Peel index, a prognostic device encompassing age, sex, cardiac history, degree and severity of shock, presence and severity of heart failure, cardiac rhythm, and ECG abnormalities (Steptoe & Whitehead, 2005). Moreover, prospective studies are required to investigate whether self-compassion reduces risk of future cardiac events and premature mortality.When it is identified that a patient, referred for cardiac rehabilitation, has high levels of depression and/or anxiety following MI, then an assessment of self-compassion might be warranted. This could entail administration of the SCS, and/or questioning the individual about how they have been "acting towards themselves" since their heart attack. Neff conceptualised self-compassion in behavioural terms (i.e. individuals rate how frequently they "act" in a certain manner), which makes this construct amenable to assessment within a functional-analytic framework (Martell, Addis, & Jacobson, 2001). Having identified the occurrence of low self-compassion "behaviours" (i.e. having identified specific examples of self-judgment, isolation and/or over-identification with feelings), a more detailed evaluation (i.e. functional analysis) of how specific low self-compassion behaviours are influencing different aspects of the adjustment process could be undertaken, contributing to the development of an individualised, self-compassion informed, formulation. For some, difficulties adjusting following MI could reflect more deeply rooted psychological issues, e.g. related to past history of abuse, previous history of psychiatric disorder. For this sub-group, formulating the origins of low

self-compassion might also be helpful (e.g. using Gilbert's three-circle model to explain the role of different affect systems related to drive, self-soothing and threat regulation, Gilbert, 2010).

Psycho-education about the potential benefits of being self-compassionate following MI could be a useful first step in the therapeutic process (e.g. discussing the finding that people who are more self-compassionate tend to experience less negative emotional impact of MI). In addition, the finding that distress following MI was not associated with cardiac function in the current study provides important empirical evidence regarding the influence of psychological factors (i.e. which are to some extent within the individuals' control) on adjustment to MI. Discussion of this finding could provide a novel insight into the power of thinking to stimulate different systems of the brain, including those involved in perception of aversive cardiac symptoms. Fundamentally, orienting cardiac patients to a bio-psycho-social conceptualisation of adjustment to MI could instil hopefulness, because this model emphasises that the adjustment process is not fully determined by biological factors.

Two therapeutic approaches which specifically target self-compassion, and which could potentially be utilised working with those struggling to adjust following MI, are Gilbert's compassion focused therapy (CFT) and mindfulness based cognitive behaviour therapy (MBCT, Segal, Williams and Teasdale, 2002): (a) Gilbert's CFT incorporates a range of techniques designed to facilitate the development of "compassionate attributes" (e.g. developing a motivation to be caring toward self and others, developing abilities to tolerate rather than avoid difficult feelings, memories or situations) and specific "compassionate skills" (e.g. learning to focus attention on things that are helpful and bringing a more balanced perspective, generating images that create compassion, engaging in compassionate behaviour, Gilbert, 2010, Welford, 2010); (b) Mindfulness based cognitive therapy (Segal et al., 2002) is an evidence-based therapeutic approach which combines principles of cognitive behavioural therapy with meditative practice, MBCT enables people to relate to their thoughts and feelings in a less judgmental and more self-compassionate manner. Preliminary findings from a pilot study (Tacon, McComb, Caldera, & Randolph, 2003, $n = 9$ women with cardiovascular disease participated in MBSR, $n = 9$ women with cardiovascular disease were assigned to a control condition) indicate that mindfulness

meditation is effective in the reduction of anxiety symptoms and unhelpful coping behaviours in cardiac patients.

Further clinical research is needed to empirically evaluate the efficacy of self-compassion focused psychological interventions following MI. For example, this could entail undertaking a case-series investigation, with a small number of depressed and low self-compassion individuals. An interesting research question concerns which individuals are likely to gain most benefit from self-compassion focused intervention? Increasing self-compassion, via compassionate imagery, has demonstrated physiological benefits (increased heart rate variability and reduced cortisol production, both factors implicated in a better prognosis in CHD) in psychologically healthy individuals (Rockliff et al., 2008). This raises the interesting possibility, which warrants further empirical investigation, that self-compassionate focused interventions might also be beneficial for those who are not reporting specific difficulties in adjustment following MI. Thus, self-compassion based interventions might be applied in the context of individual therapy with cardiac patients, or be incorporated within the group cardiac rehabilitation program.

4.4 Strengths and Limitations

The current study is the first to investigate the role of self-compassion in adjustment following MI. The thesis findings provide empirical evidence which substantiates recent theorising regarding the important role self-compassion in the context of physical health and illness (Terry & Leary, 2011). The design of the study enabled identifying that increased self-compassion is associated with reduced negative emotional impact of MI, whereas self-compassion was not associated with the cognitive representation of cardiac illness. Strengths of the study design were: (a) the study sample comprised a heterogeneous sample of individuals, representative of people referred to an urban cardiac rehabilitation service; (b) the study included a range of validated measures, which enabled evaluating of the relationship between self-compassion and emotional, cognitive and behavioural dimensions of adjustment to MI; (c) The study included an objective measure of cardiac function, which enabled demonstrating that the emotional impact of MI is, to a large extent, influenced by psychological factors; (d) The reported relationship between self-compassion and emotional adjustment variables (anxiety and depression symptoms and perceived

emotional impact of MI) was not confounded with perceived cardiac symptom severity.

A number of limitations of the current study are noteworthy: (a) the correlational nature of the design limits making inferences about the specific, (i.e. temporal and causal), nature of relationship between self-compassion and adjustment variables. However, given the compelling theoretical rationale which indicates that self-compassion confers resilience responding to health threats, the thesis represents a necessary first step towards demonstrating this relationship empirically; Second, due to ethical restrictions (we did not have permission to access data for participants who opted not to participate in the research) it was not possible to compare whether those who opted out of the research differed on key variables to those who opted in, a replication of the current study results is warranted to ensure the reliability and generalisabilty of the results. Third, the thesis results were reliant on self-report measures, and may, therefore, have been influenced by social desirability bias, e.g. potentially resulting in under-reporting of anxiety and depression (Deshields, Tait, Gfeller, & Chibnall, 1995).

In order to develop a coherent, holistic and empirically substantiated bio-psycho-social model of adjustment to MI a, large-scale, study which includes assessment, over multiple time-points, of the spectrum of factors implicated in adjustment to CHD and longer term prognosis is warranted. Based on the current study findings and the existing literature (as reviewed) which informs understanding of adjustment to CHD, a range of variables could be included in this study including biological and physiological mechanisms (heart rate variability, measurement of catecholamines, platelet activation and inflammation markers), in addition to a comprehensive range of psychosocial variables including self-compassion, social inhibition, trait hostility/anger and social support. A final limitation of the current study was its reliance on one simple measure of health behaviour (decision to opt in to cardiac rehabilitation). Future research could usefully incorporate a wider range of health behaviours, and include assessment of the relationship between intra-personal variables (including self-compassion) and behavioural response to MI over an extended period of time.

4.5 Summary and Conclusions

The study set out to examine the role of self-compassion in adjustment to MI, with adjustment encapsulating an individual's cognitive, emotional and behavioural response. The results contribute to a small, but growing, literature about the role of self-compassion in physical health and illness. As predicted, after controlling for cardiac symptoms, self-compassion was associated with three measures of poor emotional adjustment (increased self-compassion was associated with higher levels of depression and anxiety and an increased perception that MI is having a negative emotional impact). Self-compassion was not associated with cognitive representations of MI or attendance at cardiac rehabilitation. The results provide preliminary evidence which indicates that Neff's theorising about the "buffering effect" of self-compassion can be extended to understanding adjustment to a life threatening health threat (MI).

Setting a future research agenda, three routes via which self-compassion might reduce the negative emotional impact of MI have been proposed: (a) self-compassionate individuals experience less negative affect following MI than those low in self-compassion because they experience fewer self-critical thoughts; (b) self-compassion is associated with a specific mode of schematic processing mode in response to cardiac stimuli which attenuates negative emotion; (c) self-compassion facilitates self-reflective conceptual processing of cardiac stimuli via increased mindful awareness. Drawing on the subjective experience of MI (as described in a previous qualitative analysis) enabled considering how self-compassion might facilitate regaining control of one's life following MI. In summary, self-compassionate individuals may be better equipped to regain control over their lives than those low in self-compassion because: (a) they are less likely to be overwhelmed by anxious existential concerns/guilt about the contribution of lifestyle factors; (b) negotiating role transitions (adaptation to physical limitations) will be easier, because for those high in self-compassion self-worth is not contingent upon attainment and positive evaluation, facilitating help-seeking; (c) because self-compassion enhances effective self-regulation, it will facilitate "minimising uncertainty" following MI, including goal setting, making comparisons with others who have had a heart attack, seeking reassurance from health professionals and learning about their heart

condition. Future qualitative research could usefully compare the experience of adjusting to MI in those who are high and low in self-compassion.

The results represent a preliminary step towards demonstrating that self-compassion based interventions have potential clinical utility undertaking psychological work with individuals following MI. A compassion focused approach could inform individual psychological assessment, formulation and treatment with clinically depressed and/or anxious individuals following MI, or might also be adapted for inclusion in group formats (e.g. use of compassionate imagery as an add-on to cardiac rehabilitation). Further clinical research is required to empirically evaluate the application of compassion focused therapy within the context of adjustment to MI.

In conclusion, the study represents a timely contribution to emerging evidence base which indicates that self-compassion is an important psychological mechanism in the context of health and illness. More specifically, the results contribute to a developing bio-psycho-social understanding of depression and anxiety post MI. It is hoped that the current study will inform the development of future research programmes and, ultimately, contribute to informing the development of evidence-based psychological interventions aimed at improving adjustment following MI.

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Appendices

Appendix 1: Measures

HOW I TYPICALLY ACT TOWARDS MYSELF IN DIFFICULT TIMES

Please read each statement carefully before answering. To the right of each item, indicate how often you behave in the stated manner, using the following scale:

Almost never				Almost always
1	2	3	4	5

1. I'm disapproving and judgmental about my own flaws and inadequacies. ☐
2. When I'm feeling down I tend to obsess and fixate on everything that's wrong. ☐
3. When things are going badly for me, I see the difficulties as part of life that everyone goes through. ☐
4. When I think about my inadequacies, it tends to make me feel more separate and cut off from the rest of the world. ☐
5. I try to be loving towards myself when I'm feeling emotional pain. ☐
6. When I fail at something important to me I become consumed by feelings of inadequacy. ☐
7. When I'm down and out, I remind myself that there are lots of other people in the world feeling like I am. ☐
8. When times are really difficult, I tend to be tough on myself. ☐
9. When something upsets me I try to keep my emotions in balance. ☐
10. When I feel inadequate in some way, I try to remind myself that feelings of inadequacy are shared by most people. ☐
11. I'm intolerant and impatient towards those aspects of my personality I don't like. ☐
12. When I'm going through a very hard time, I give myself the caring and tenderness I need. ☐

Almost never 1	2	3	4	Almost Always 5	
13. When I'm feeling down, I tend to feel like most other people are probably happier than I am.					
14. When something painful happens I try to take a balanced view of the situation.					
15. I try to see my failings as part of the human condition.					
16. When I see aspects of myself that I don't like, I get down on myself.					
17. When I fail at something important to me I try to keep things in perspective.					
18. When I'm really struggling, I tend to feel like other people must be having an easier time of it.					
19. I'm kind to myself when I'm experiencing suffering.					
20. When something upsets me I get carried away with my feelings.					
21. I can be a bit cold-hearted towards myself when I'm experiencing suffering.					
22. When I'm feeling down I try to approach my feelings with curiosity and openness.					
23. I'm tolerant of my own flaws and inadequacies.					
24. When something painful happens I tend to blow the incident out of proportion.					
25. When I fail at something that's important to me, I tend to feel alone in my failure.					
26. I try to be understanding and patient towards those aspects of my personality I don't like.					

Brief-IPQ

For the following questions, please circle the number that best corresponds to your views:

1. How much does your illness affect your life?

No affect at all										Severely affects my life
0	1	2	3	4	5	6	7	8	9	10

2. How long do you think that your illness will continue?

A very short time										Forever
0	1	2	3	4	5	6	7	8	9	10

3. How much control do you think you have over your illness?

No control										Extreme control
0	1	2	3	4	5	6	7	8	9	10

4. How much do you think your treatment can help your illness?

Not at all										Extre-mely helpful
0	1	2	3	4	5	6	7	8	9	10

5. How much do you experience symptoms from your illness?

No symp-toms										Many severe symp-toms
0	1	2	3	4	5	6	7	8	9	10

6. How concerned are you about your illness?

Not at all										Extre-mely
0	1	2	3	4	5	6	7	8	9	10

7. How well do you feel you understand your illness?

Don't under-stand										Very clearly
0	1	2	3	4	5	6	7	8	9	10

8. How much does your illness affect you emotionally? (does it make you angry, scared, upset or depressed.

Not at all										Extre-mely
0	1	2	3	4	5	6	7	8	9	10

Please list in rank order the three most important factors that you believe caused your cardiac event?

1).....

2).....

3).....

CARDIAC SYMPTOM CHECKLIST

Please can you indicate how much were you bothered by the following symptoms in the past seven days?

Not at all	A little bit	Moderately	Quite a bit	Extremely
0	1	2	3	4

1. Dizziness and faintness ☐
2. Pains in the heart or chest ☐
3. Feeling low in energy or slowed down ☐
4. Heart pounding or racing ☐
5. Trouble getting your breath ☐

Many thanks

5

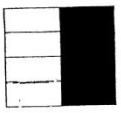
HAD Scale

Name: Date:

Doctors are aware that emotions play an important part in most illnesses. If your doctor knows about these feelings he will be able to help you more.
This questionnaire is designed to help your doctor to know how you feel. Read each item and place a firm tick in the box opposite the reply which comes closest to how you have been feeling in the past week.
Don't take too long over your replies: your immediate reaction to each item will probably be more accurate than a long thought-out response.

Tick only one box in each section

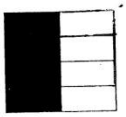
I feel tense or 'wound up':
- Most of the time
- A lot of the time
- Time to time, Occasionally
- Not at all



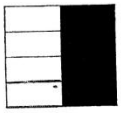
I still enjoy the things I used to enjoy:
- Definitely as much
- Not quite so much
- Only a little
- Hardly at all

I get a sort of frightened feeling as if something awful is about to happen:
- Very definitely and quite badly
- Yes, but not too badly
- A little, but it doesn't worry me
- Not at all

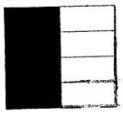
I can laugh and see the funny side of things:
- As much as I always could
- Not quite so much now
- Definitely not so much now
- Not at all



Worrying thoughts go through my mind:
- A great deal of the time
- A lot of the time
- From time to time but not too often
- Only occasionally

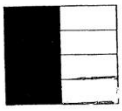


I feel cheerful:
- Not at all
- Not often
- Sometimes
- Most of the time

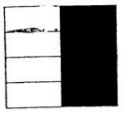


I can sit at ease and feel relaxed:
- Definitely
- Usually
- Not often
- Not at all

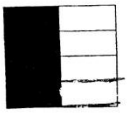
I feel as if I am slowed down:
- Nearly all the time
- Very often
- Sometimes
- Not at all



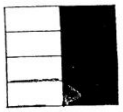
I get a sort of frightened feeling like 'butterflies' in the stomach:
- Not at all
- Occasionally
- Quite often
- Very often



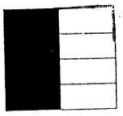
I have lost interest in my appearance:
- Definitely
- I don't take so much care as I should
- I may not take quite as much care ..
- I take just as much care as ever



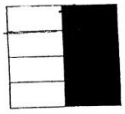
I feel restless as if I have to be on the move:
- Very much indeed
- Quite a lot ...
- Not very much
- Not at all



I look forward with enjoyment to things:
- As much as ever I did
- Rather less than I used to
- Definitely less than I used to
- Hardly at all



I get sudden feelings of panic:
- Very often indeed
- Quite often ...
- Not very often
- Not at all



I can enjoy a good book or radio or TV programme:
- Often
- Sometimes
- Not often
- Very seldom

Do not write below this line

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Appendix 2: Nurse Script

Example script for nurses

Introduction
We are currently asking all patients who have had a heart attack (MI) to consider participating in a research study that we are running.

Rationale
We know that if people are feeling very low in mood, this can affect how well they recover after an MI, but we don't really know why that is the case.

This study is looking at the different ways people think about themselves and about the problems they face and how this might influence their recovery.

So the research is helping us to understand what psychological factors affect recovery and what kind of extra support some patients might need.

Commitment
If you agree, there are four questionnaires you will be asked to fill in (they take about 15 minutes) and you are also giving the researcher (Dr Kate Pearson) permission to use the information in your hospital record. You will be asked to fill in the extra questionnaires again in about three month's time.

You can still take part in the research even if you do not decide to participate in the rehabilitation program.

Research documents
Here is an information sheet which tells you what the research is about and what taking part involves.

Please can you return the consent form and the completed questionnaires with the rest of the pack. Taking part is optional, if you wish to opt out of the research please just complete the consent form indicating that you do not wish to take part.

When you complete the questionnaires some of the questions might seem quite similar. Just answer each question as you think best, without thinking about it too much or worrying about whether your answers are consistent. It would be very helpful if you could give an answer for every question so that we can score the questionnaire.

If you have any questions about the research then you should contact Kate Pearson – her details are on the information sheet.

Appendix 3: Participant Information Sheet

Department of
Cardiac Health & Rehabilitation

King's College Hospital NHS
NHS Foundation Trust

Participant Information Sheet

Research Study: Adjustment following a cardiac event: Issue 2.1 (02/05/2011)

We would like to invite you to take part in a research study. Before you decide we would like you to understand why the research is being done and what it would involve for you. The nurse who gives you this sheet will go through the information sheet with you and answer any questions you might have. If you have any further questions then you can contact the project chief investigator, Dr Kate Pearson.

Part 1: What is the purpose of the study?

The research aim is to increase understanding of why some people find it easier than others to do things to improve recovery after a cardiac event. We are interested in finding out whether being self-compassionate (kind and supportive towards one-self) affects how people respond following a cardiac event. We are also interested in finding out how rumination (dwelling on negative thoughts and feelings) affects recovery. This information could help us to develop more effective ways of supporting people with their cardiac rehabilitation.

Why have I been invited?

Everybody who is referred to the King's College Hospital Cardiac Health and Rehabilitation service following a Myocardial Infarction (heart attack) is being invited to participate in the research.

Do I have to take part?

It is up to you to decide to join the study. The nurse who gives you the form will go through this information sheet with you. If you agree to take part, we will then ask you to sign a consent form. You are free to withdraw at any point, without giving a reason. This would not affect the standard of care you receive.

What does taking part involve?

You will complete the consent form and questionnaires included in this pack.

Issue 2.0/02/04/2011

Department of
Cardiac Health & Rehabilitation

King's College Hospital NHS
NHS Foundation Trust

You will give consent that information provided for the National Dataset for Cardiac Rehabilitation (the other questionnaires you have completed) and your hospital patient record can be used for the purposes of this research.

We will ask you to complete four extra questionnaires (enclosed with this pack) now and then again in approximately six to eight weeks time.

What are the possible disadvantages and risks of taking part?

Taking part will involve your time to complete the additional questionnaires (approximately fifteen minutes on two occasions). There are no risks associated with taking part.

What are the possible benefits of taking part?

The information you provide will have no direct benefit to your current treatment. However, the information we get from the study could help us to develop better ways of helping people following a heart attack in future.

What if I want to complain?

Any complaint about the way you have been dealt with during the study will be addressed. The detailed information on this is given in Part 2.

Will my taking part be confidential?

Yes, we will follow ethical and legal practice and all information about you will be handled in confidence.

Part 2

What will happen if I don't want to carry on with the study?

You are free to withdraw from the study at any time. If you wish to withdraw you should contact, Dr Kate Pearson. The additional questionnaires that you completed will be destroyed and none of the information you have provided to the service will be used in the research study.

What if there is a problem?

If you have a concern about any aspect of this study, you can contact Dr Kate Pearson (Katherine.Pearson@slam.nhs.uk, tel. 020 7848 0223) or Dr Nicole de Zoysa (Tel. 020 3299 3495). If you wish to complain formally you can do this through the Patient Advice and Liaison Service (PALS) PALS The Patient Advice and Liaison Service (PALS) is a service that offers

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can also provide help and advice if you have a concern or complaint that staff have not been able to resolve for you. The PALS office is located on the ground floor of the Hambleden Wing, near the main entrance on Bessemer Road - staff will be happy to direct you. Tel: 020 3299 3601 Textphone: 020 3299 1878, Fax: 020 3299 3626, email: kch-tr.PALS@nhs.net

Will my taking part be kept confidential?

All information which is collected during the course of the study will be kept strictly confidential. The information you give us will be stored securely and in an anonymous fashion (you cannot be identified by others). Nobody other than the Chief Investigator and the clinical team will have access to your data.

What will happen to the results of the research study?

All participants who are interested in finding out about the research results will receive a brief written summary at the end of the research. The written report which results from this research will form part of the Chief Investigator's doctoral thesis, and will also be submitted for publication in a psychology journal. No individual participant will be identified in any report/publication.

Who is organising and funding the research?

The research is being undertaken as part of a Doctorate in Clinical Psychology, funded by the National Health Service.

Who has reviewed the study?

All research in the NHS is looked at by an independent group of people called a Research Ethics Committee, to protect your interests. This study has been reviewed and given a favourable opinion by South East London Research Ethics Committee (REC) 4.

Contact for further information

Dr Kate Pearson (Katherine.Pearson@slam.nhs.uk, tel. 020 7848 0223)

THANKYOU FOR YOUR HELP

Department of
Cardiac Health & Rehabilitation

King's College Hospital NHS
NHS Foundation Trust

Consent form: Adjustment following a cardiac event

Chief Investigator: Dr Kate Pearson

		Please initial box
1	I confirm that I have read and understand the information sheet dated 02/05/2011 (version 2.1) for the above study. I have had the opportunity to ask questions.	☐
2	I understand that my participation is voluntary and that I am free to withdraw at any time without giving any reason, without my medical care or legal rights being affected.	☐
3	I give permission that information provided for the National Database for Cardiac Rehabilitation and my hospital patient record can be used (anonymously) for this research.	☐
4	I agree to take part in the above study.	☐

Name of patient:.....

Signature:.....

Date:.....

I have explained the project and answered questions honestly and fully.

Name of person taking consent:.....

Signature:.....

Date:.....

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Appendix 4: Ethical Approval Letter

NHS

National Research Ethics Service

NRES Committee London - Camberwell St Giles

(Formerly known as The Joint South London and Maudsley and Institute of Psychiatry Research Ethics Committee)

1st Floor, Cavendish Building
St Thomas' Hospital
London
SE1 7EH

Telephone: 020 7188 5068
Facsimile: 020 7188 5085

28 April 2011

Dr Katherine A Pearson
Department of Psychology PO78
A2B 3rd Floor
Institute of Psychiatry
SE5 8AF

Dear Dr Pearson

Study title: **An investigation of the role of self-compassion and rumination in adjustment following a cardiac event**

REC reference: **11/H0807/8**

Thank you for your letter of 08 April 2011, responding to the Committee's request for further information on the above research and submitting revised documentation.

The further information has been considered on behalf of the Committee by the Chair.

Confirmation of ethical opinion

On behalf of the Committee, I am pleased to confirm a favourable ethical opinion for the above research on the basis described in the application form, protocol and supporting documentation as revised, subject to the conditions specified below.

Ethical review of research sites

NHS sites

This favourable opinion applies to all NHS sites taking part in the study, subject to management permission being obtained from the NHS/HSC R&D office prior to the start of the study (see "Conditions of the favourable opinion" below).

Conditions of the favourable opinion

The favourable opinion is subject to the following conditions being met prior to the start of the study.

Management permission or approval must be obtained from each host organisation prior to the start of the study at the site concerned.

Management permission ("R&D approval") should be sought from all NHS organisations involved in the study in accordance with NHS research governance arrangements.

Appendix 5: Replication of Main Study Analyses with Untransformed Variables

Table 5.1

Summary of Hierarchical Regression Analyses with Untransformed Variables: (a) Concurrent Relationship Between Self-compassion and Depression Controlling for Cardiac Symptom Severity, (b) Concurrent Relationship Between Self-compassion and Anxiety Controlling for Cardiac Symptom Severity

Variable	a)			b)		
	B	*SE B*	B	*B*	*SE B*	B
Step 1						
Cardiac symptoms	.40	.11	.42***	.38	.11	.39***
Step 2						
Cardiac symptoms	.34	.11	.35**	.28	.11	.29*
Self-compassion	-1.38	.72	-.23	-2.00	.72	-.32**
	Note: R^2*= .18 for step 1,* ΔR^2*= .05 (n.s)* *One outlier case with Std residual = 4.35*			*Note:* R^2*= .14 for step 1,* ΔR^2*= .09 (p< .01)* *One outlier case with Std residual = 3.63*		

Note: Association between self-compassion and depression approaching statistical significance at the 0.05 level, p = .06.

Table 5.2

Self-Compassion and Beliefs About the Emotional Impact of Cardiac Illness (Emotional Impact, IPQ8): How Much Does Your Illness Affect You Emotionally?

Variable	*B*	*SE B*	B
Step 1			
T1 Depression	.04	.12	.06
T1 Anxiety	.22	.11	.29
Cardiac Symptoms	.21	.09	.28*
Step 2			
T1 Depression	.03	.11	.04
T1 Anxiety	.12	.11	.16
Cardiac symptoms	.16	.09	.21
Self-compassion	-1.83	.53	-.39**

Note:
R^2*= .26 for step 1,* ΔR^2*= .12 (p = .001)*

Table 5.3

Self-compassion and Beliefs About MI Consequences (IPQ1): How Much Does Your Illness Affect your Life?

Variable	*B*	*SE B*	B
Step 1			
Age	.02	.03	.08
T1 Depression	.22	.11	.33*
T1 Anxiety	-.07	.10	-.11
CS	.31	.08	.44***
MI Severity	1.54	.65	.27*
Step 2			
Age	.02	.03	.08
T1 Depression	.24	.11	.35*
T1 Anxiety	-.11	.11	-.16
CS	.29	.08	.44***
MI Severity	1.28	.71	.22
Self-compassion	-.49	.52	-.11

Note:
R^2= .50 for step 1, ΔR^2= .01
(p = n.s)

Table 5.4

Self-Compassion and Beliefs About Illness Controllability (Personal Control, IPQ3): How Much Control Do You Feel You Have Over Your Illness?

Variable	*B*	*SE B*	B
Step 1			
T1 Anxiety	.14	.07	.23
CS	.20	.07	.34*
Step 2			
T1 Anxiety	.11	.08	.18
CS	.18	.07	.31*
Self-compassion	-.54	.46	-.15

Note:
R^2= .23 for step 1, ΔR^2= .02
(p = n.s)

Table 5.5

Self-Compassion and Beliefs About Illness Controllability (Treatment Control, IPQ4): How Much Do You Think Your Treatment Can Control Your Illness?

Variable	*B*	*SE B*	B
Step 1			
Cardiac Symptoms	-.15	.05	-.35**
Step 2			
Cardiac symptoms	-.13	.05	-.31
Self-compassion	.38	.34	.14

Note:
R^2= .13 for step 1, ΔR^2= .02
(p = n.s)

SERVICE EVALUATION PROJECT

AN AUDIT OF ASSESSMENT AND OUTCOME MEASURES USED WITHIN THE MAUDSLEY PSYCHOTHERAPY (CBT) SERVICE: THE RELATIONSHIP BETWEEN PERSONALITY DISORDER, ROUTINE ASSESSMENT MEASURES AND TREATMENT OUTCOMES FOR AXIS I DISORDERS

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Abstract

The aims of the service evaluation were to: (a) audit the use of routine assessment and outcome measures (audit of all cases referred to the service in 2007) and; (b) to investigate the relationship between a continuous measure of personality disorder (PDQ-4 total score) and other assessment and outcome measures. Assessment measures were available for 34 – 50% (*n*= 52-76) of the total assessed(*N* = 151). Outcome measures were available for approximately one quarter (*n*= 21-25) of those taken on for therapy (*n*= 98). Higher levels of personality disorder were associated with longer therapy duration. Higher levels of personality disorder were not significantly correlated with CBT suitability ratings, ratings of urgency/severity (an index of the actual and potential consequences of an individual's difficulties), therapy attendance rates, case difficulty ratings or post treatment distress.The results are discussed in relation to the literature, and recommendations for improving assessment and outcome measurement are proposed.

2. Introduction

2.1 Service Description

The Maudsley Psychotherapy Service, led by Dr Stirling Moorey, is a specialist psychological therapy which provides a range of group and individual psychotherapy services including psychoanalytic psychotherapy, cognitive behavioural therapy (CBT), couples and family therapy and peri-natal psychotherapy. The focus for the service evaluation is the individual CBT service. The CBT service offers individual therapy for individuals with complex or chronic depression and anxiety disorders, often complicated by personality factors. The service evaluation used referral data collected over a one year period (2007).The service also provides a training platform for junior Doctors, trainee Clinical Psychologists and other mental health professionals. Thus, individuals presenting with less complex psychological difficulties may be allocated to a trainee therapist, under the supervision of a qualified practitioner. In 2007, individuals were referred to the service via their GP or other health professionals, across a number of boroughs. Since the implementation of the IAPT initiative, the Maudsley Psychotherapy Service has become a point of referral for more complex cases from the Southwark and Lewisham IAPT services.

2.2 Aims of Research

The aims of the service evaluation were: First, to audit the extent to which routine assessment and outcome measures are collected within the service. This was deemed necessary in order to provide a baseline of data collection practice and, in future, to enable measuring improvement in rates of data collection; The second aim was to investigate the relationship between a measure of personality disorder (PDQ-4 total score, an index of the likely presence of Axis II disorder) and other key assessment and outcome measures. Understanding the effect of personality disorderon assessment measures and therapy outcomes could usefully inform the development of targeted interventions focused on improving outcomes for those with Axis I disorders in the context of co-morbid personality disorder, an important focus for this specialist service.

More specific aims of the service evaluation were to: (a) to quantify the extent of missing data over the evaluation reporting period; (b) to provide a descriptive summary of cases referred to the service in 2007 (total number of referrals, the conversion rate referrals to assessments andthe conversion rate assessment to therapy cases); (c) to investigate the concurrent relationships between patients' self-report of personality disorderand clinician ratings of suitability for CBT (assessed using the Suitability for Short-Term Cognitive Therapy Rating Scale, SSCT, Appendix 1), urgency (i.e. expected consequences if the patient's difficulties are not treated, Appendix 2) and severity (the impact that the problem is having on the individual's current functioning, Appendix 3) and case difficulty(conceptualised as the level of therapist experience required to undertake therapy with the patient, Appendix 4), and; (d) to investigate the prospective relationship between personality disorder(as assessed prior to the start of treatment), therapy duration, attendance and treatment outcomes (post treatment symptoms).

2.3 Research Questions

In terms of investigating the relationship between personality disorderand the other measures used within the service, a number of clinically pertinent research questions were identified:

1) Are higher levels of personality disorder associated with lower ratings of suitability to CBT, as assessed using the SSCT rating procedure?

2) Are higher levels of personality disorder associated with higher ratings of urgency (i.e. more severe consequences if psychological difficulties are not treated) and severity (i.e. greater impact of the problem on the individual's life)?

3) Are higher levels of personality disorder associated with higher ratings of case difficulty at assessment?

4) Are higher levels of personality disorder a factor which influences therapy duration and attendance rates?

5) Do higher levels of personality disorder at assessment predict poorer therapy outcomes?

3. Literature Review

Literature relevant to this service evaluation includes; (a) the literature surrounding the application of routine assessment and standardised outcome measures in mental health services; (b) empirical studies which have evaluated the impact of personality disorder (PD) on CBT suitability and therapy outcomes (treatment of Axis I disorders in the context of Axis II co-morbidity); (c) previous studies which have investigated the assessment of individuals' suitability for Cognitive Behaviour Therapy (CBT) and the evolution of standardised measures to assesses CBT suitability.

3.1 Clinician use of assessment and outcome measures

Johnston and Gowers (2005, p.133) defined routine outcome measurement as "the detailed evaluation of the impact of treatment on areas of a client's functioning that are of clinical relevance (for example symptoms, maladaptive behaviours or social functioning)", they argued that this is an essential component of good clinical governance and clinical practice. In a review of outcome measurement in child and adolescent mental health services (CAMHS), Johnston and Gowers outlined a rationale for the systematic use of outcome measures. Specifically, they argued that outcome measurement is necessarydue to a requirement to conform to a model of evidence-based practice (where interventions are supported by sound empirical data), to justify funding in relation to commissioners, to enable feedback to patients on treatment outcomes, and as part of ongoing clinical management of clients. Similarly, Sperlinger (2002) argued that it is an ethical and professional imperative that clinicians ensure that services being delivered are meeting user needs, and identified a range of different possible uses of outcome measures to facilitate services meeting this aim. These included the comparison of outcomes between services, between different clinicians within the same service, and between different user groups.

Whilst there is some agreement in the literature regarding the importance of routinely collecting outcome measurement in mental health services, there is also an acknowledgment that, in practice, this is often problematic. A number of reasons for these identified difficulties in routine outcome assessment have been identified: Mellor-Clark, Barkham, Connell, and Evans (1999) argued that

outcome measurement in clinical psychology is in a state of disarray due to the diversity of measures used by practitioners. Johnston and Gower (2005) asked a sample of lead clinicians to identify obstacles to routine outcome measurement. From this data, they derived five categories of factors which could hinder routine outcome assessment: (1) staffing issues and resource shortfall; (2) philosophical/staff resistance; (3) scientific merit; (4) utility issues; and (5) patient/parent issues. Findings from another study (Trauer, Callaly, &Herrman, 2009),which compared attitudes of different mental health staff to routine outcome measurement, indicate that attitudes towards outcome measurement vary by profession (nursesgave the highest ratings of outcome measure usefulness, and psychologists gave the lowest ratings).

3.2Personality disorderand CBT

The term "personality disorder" refers to an enduring pattern of inner experience and behaviour that deviates markedly from the expectations of an individual's culture, is pervasive and inflexible, has onset in adolescence or early adulthood, is stable over time and results in distress and impairment (American Psychiatric Association, DSM-IV-TR, 2000). Conceptualisations of personality disorder differ according to whether they assume that there are distinct categorical diagnoses or, alternatively, that personality pathology reflects quantitative rather than qualitative differences from "normal personality" (Trull & Durrett, 2005), i.e. a "dimensional" model. Whilst the DSM-IV-TR assumes that personality disorder can be defined in terms of distinct clinical syndromes, there is also an acknowledgment that the dimensional approach in an "alternative perspective" and the two models are not mutually exclusive (Trull & Durrett, 2005). The dimensional approach is the preferred model for conceptualising "personality pathology" within the Maudsley Psychotherapy Service.

There is substantive evidence which indicates that the presence of personality disorderreduces suitability for CBT and adversely affects treatment outcomes; First, higher levels of personality disorderare associated with lower total suitability for CBT scores on a clinician rated interview based measure of suitability for CBT (Suitability for Short-Term Cognitive Therapy Interview,SSCT, Vallis, Howes, & Standage, 2000); Second, individuals with

personality disorderare more likely to drop out of therapy early than those without personality disorder(Persons, Burns, & Perloff, 1988); Third, findings from a number of empirical studies indicate that personality disorderis associated with a poorer response to therapy in the treatment of depression (for a review see Mulder, 2002) and anxiety disorders (Chambless, Tran, & Glas, 1997, OCD; de Haan et al., 1997; Fals-Stewart, & Lucente, 1993). Indeed, in a recent meta-analysis of depression treatment studies (32 studies, all of which had made a categorical assessment of the presence of personality disorder or no personality disorder, were included in the analysis), co-morbid personality disorder was associated with a two-fold increase in the risk of a poor outcome for depression compared with no personality disorder (Newton-Howes, Tyrer, & Johnson, 2006).

Some inconsistencies in the literature should be noted however. Thus, in a number of studies, individuals with personality disorderhave attained an equivalent response to CBT (and other treatments for Axis I disorders) compared to those without personality disorder(Dreessen, Arntz, Luttels, & Sallaerts, 1994; Kuyken, Kurzer, DeRubeis, Beck, & Brown, 2001). In a review of 15 'best designed' studies (i.e. studies included a prospective design and semi-structured interview assessment of personality disorder, eight of the studies included CBT, 3 psychopharmacology and four included mixed or unstandardised treatments), Dreeson & Arntz (1998, p.492) found that, overall, individuals with personality disorderdid not respond less favourably than individuals without personality disorderto treatment for Axis I anxiety disorders.

Differences in study design and methodology are one factor which could explain discrepant findings between studies which have assessed the effect of personality disorderon response to treatment for Axis I disorders. Studies differ according to whether a categorical or dimensional definition of personality disorderis used. Poor discriminant validity is a recognised problem with the categorical model of personality disorder(Blais & Norman, 1997). Methodological limitations of some previous studies which have investigated the impact of personality disorderon treatment of Axis I disorder include failing to statistically control for depression chronicity and severity (a factor which has been found to reduce the effect of personality disorderon outcome where it is controlled, e.g. Kelly, Nur, Tyrer, & Casey, 2009) and failing to control for

treatment (i.e. patients with and without personality disorder not randomly allocated to treatment).

In summary, there is substantive empirical evidence which indicates that personality disorderis associated with poor outcomes in CBT. However, there are also some conflicting findings, which raise the possibility that previous results which indicate that personality disorderpredicts poor outcomes may have been conflated due to methodological limitations in study design.

3.3 Assessing suitability for CBT

Assessment of individual suitability for psychotherapy has its roots in the psychodynamic tradition. For example, Sifneos (1972) argued that above average intelligence, a history of at least one meaningful relationship, the ability to interact well with the evaluator, a circumscribed main complaint, and motivation to change are key factors which predict a good outcome in therapy. More recently, general principles for evaluating individual suitability for therapy have been adapted and applied to the CBT perspective (Blenkiron, 1999; Safran, Segal, Shaw, & Vallis, 1990). Moreover, empirical studies have highlighted specific factors which predict a good response to CBT. Thus, Fennell & Teasdale (1987) found that individuals who responded positively to a written treatment rationale and homework assignments benefited more from CBT than those who didn't. In another study, Persons, et al., (1988) found that low scores on the Beck Depression Inventory (BDI), compliance with homework assignments and an absence of 'endogenous symptoms' predicted better outcomes in CBT.

Safran and colleagues (1990) developed a semi-structured interview (Suitability for Short-Term Cognitive Therapy Interview, SSCT) to enable evaluating the suitability of individuals for short-term cognitive therapy. Informed by previous theorising in this area (Budman & Gurman, 1988; Horowitz, Marmer, Weiss, DeWitt, & Rosenbaum, 1984), observation of intake interviews and evaluation of clinical outcomes at the Cognitive Therapy Unit at the Clarke Institute of Psychiatry in Toronto, they identified nine suitability criteria; (a) accessibility of automatic thoughts; (b) awareness and differentiation of emotions; (c) acceptance of personal responsibility for change; compatibility with cognitive rationale; (d) alliance potential: in-session evidence; (e) alliance potential: out of

session evidence; (f) chronicity of problems; (g) security operations (defined as the extent to which the patient uses defensive information processing strategies or interpersonal manoeuvres to reduce anxiety); (h) focality (defined as the patient's ability to maintain a problem focus).

The goal in developing this standardised approach to the assessment of suitability for CT was to reduce frustration for patients and therapists through the early identification of individuals unlikely to engage well with short-term cognitive therapy. Consistent with this goal, prospective findings indicate that the SSCT predicts the outcome of short-term cognitive therapy; First, Safran, Segal, Vallis, Shaw and Samstag (1993) administered the SSCT to a sample of individuals referred for cognitive therapy (N = 64). Findings from this study indicated that SSCT scores were significantly correlated with a range of therapy outcome measures, including therapist and patient 'global success ratings' (overall success of therapy rated on a 100 point scale), change in key complaints identified at intake, depressive symptoms, negative automatic thoughts, and anxiety. Moreover, SSCT scores discriminated patients who were accepted for CT from those who were deemed to be unsuitable, so that, individuals accepted for therapy had significantly higher SSCT scores (indicating greater suitability for therapy) than those who were not accepted for therapy (all items, with the exception of item seven: chronicity, were significantly different between the accepted and not accepted groups). A similar pattern of results was obtained in another more recent study (Myhr, Talbot, Lawrence, & Pinard, 2007) in which SSCT scores predicted therapeutic change (assessed using the 'reliable change index' a difference score corrected for the reliability of diagnostic specific measure, Jacobson & Truax, 1991) in a sample of individuals referred to a specialist adult outpatient service (N = 113). Together, these findings provide preliminary evidence which indicates that the SSCT has clinical utility in assessing suitability for CT.

4. Methods

4.1 Data Collection

A paper based register, (maintained by the service administrator) provided a complete list of all individuals referred to the service over the duration of the reporting period (1st January 2007 – 31st December 2007 inclusive). The researcher then accessed each individual's electronic record on the electronic Patient Journey System (ePJS). This enabled establishing whether the individual had been assessed by the service and/or taken on for therapy. A manual search of both ePJS correspondence (electronic documents attached) and archived documents in the document repository (pdf file from paper-based records) was undertaken to locate assessment and outcome measures. In addition, an automatic report was generated from ePJS (via the ePJS data management team) which listed the number of sessions attended, cancelled and DNAs for individuals referred to the service in 2007 who subsequently received therapy.

4.2 Approval for the Audit and Service Evaluation

An Audit and Service Evaluation Project Proposal Form (PPF) was prepared and submitted to the South London and Maudsley (SLAM) NHS Trust Competency Group Project Officer for approval. The audit was approved with no issues raised.

4.2 Participants

Participants in the study were a sub-set of the total number of individuals referred to the service in 2007 (N = 257) who were assessed (n= 151). Of these, 66% were female (n = 99), the mean participant age was 38 years (Range, 18-75, SD = 11.03). Over a third of those assessed (34%) received a diagnosis of depression (n = 52).Of those who were assessed, 65% (n= 98) were taken on for therapy. Table 1 describes the diagnoses assigned to those who were referred to the service and assessed in 2007.

Difficulty	Number	%
Depression	52	34.4
Mixed depression/anxiety	11	7.3
Anxiety	8	5.3
Panic	7	4.6
Bi-polar	6	4
GAD	6	4
Low self-esteem	6	4
Personality disorder	4	2.6
Agoraphobia	3	2
Social phobia	3	2
Health anxiety	2	1.3
OCD	2	1.3
Anger	2	1.3
PTSD	1	.7
Other	9	6
Not specified	29	19

Table 1: Axis I Diagnoses of Individuals Assessed by the Service in 2007

4.3 Measures

Suitability for Short-Term Cognitive Therapy Interview (SSCT; Safran, et al., 1990, Appendix 1)

The SSCT is an interview and rating procedure designed to evaluate the potential appropriateness of patients for short-term cognitive therapy (in the current service context the measure is used to assess suitability for CBT). It comprises a 1-hour semi-structured interview focused on eliciting information related to nine criteria, which, in the Maudsley Psychotherapy Service, was incorporated into the overall assessment for therapy. The interview is focused on eliciting information from the patient relevant to the nine suitability criteria defined by Safran, et al., (1990). The interview has demonstrated acceptable inter-rater reliability (κ>.70, on all but the focality, sub-scale, i.e. defined as the ability to focus in session in a task oriented way,κ =.46), construct and predictive validity (Safran, et al., 1993). Scores are rated on a five point scale, with higher scores indicating greater perceived suitability for CBT (Range 0-45).

Urgency/severity score (Appendix 2 and 3)

Clinicians within the service compute a combined urgency/severity score by summing scores on two scales which assess; 1) urgency (conceptualised as the expected consequences if the patient's difficulties are not treated) and 2) severity/disability (conceptualised as the impact that the problem is having on the individual's current functioning across the domains of health and well-being, work and interpersonal relationships). Urgency and severitywere rated using two five-point Likert-scales with higher scores indicating a higher degree of urgency/severity.

Difficulty score (Appendix 4)

Following a preliminary assessment clinicians assign a difficulty rating which indicates the level of therapist experience required to work for a specific patient and which guides the allocation of patient's to specific therapists. Difficulty was rated on a five-point scale with higher scores indicating that a greater level of therapist expertise is required.

Personality Disorder Questionnaire-4 (PDQ; Hyler 1994, Appendix 5)

The PDQ is a 99-item self-report questionnaire which assesses criteria for personality disorder (ten types of personality disorder outlined in the DSM-IV and the passive-aggressive and depressive personality disorders included in the DSM-IV appendix B). Each item corresponds to a single DSM-IV diagnostic criterion, a true response is scored as pathological. The questionnaire can be scored to generate individual personality disorder sub-types (based on the number of DSM-IV criteria endorsed for each type), a total score can also be generated which consists of the total number of pathological traits endorsed (scores > 50 indicate likely presence of a PD). The questionnaire provides an index of personality disorder. Clinically, the PDQ-4 is used as a screening tool for Axis-II disorder. A further clinician interview is required to assess the clinical significance of difficulties reported before a diagnosis of Axis-II disorder can be made (i.e. assessing duration and persistence of difficulties and extent of impairment and/or distress associated with these). A previous version of the scale has demonstrated good test-re-test reliability (Davison, Leese, & Taylor, 2001; Uehara, Sakado, & Sato, 1997).

Beck Depression Inventory (BDI; Beck, Steer, & Brown, 1996, Appendix 6)

The BDI is a well-validated 21-item self-report questionnaire which measures depressive symptom severity in the past two weeks. Individuals rate their answers using a 4-point scale with higher scores indicating greater depression severity (range 0-63).

Beck Anxiety Inventory (BAI; Beck & Steer, 1993, Appendix 7)

The BAI is a well-validated 21 item self-report questionnaire which measures anxiety symptoms in the past week. Individuals rate the extent of anxiety symptoms (e.g. numbness, hot and cold sweats or feelings of dread) using a 4-point scale with higher scores indicating greater anxiety severity (range 0-63)

Clinical Outcomes in Routine Evaluation-Outcome Measure (CORE-OM; Evans et al., 2000, Appendix 8)

The CORE-OM is a generic 34 item self-report measure of global distress, including the following subscales: subjective well-being, commonly experienced problems or symptoms, social/life functioning and risk to self and others. The measure is used as an initial screening tool and for assessing response to psychological therapy. Items are score on a 5-point scale from 0-4 (0, not at all – 4, most of the time). Higher scores indicate greater distress.

5. Findings

Missing data analysis: To what extent are routine assessment and outcome measures used within the service?

A summary of the number of completed assessment and treatment end questionnaires located during the data audit are detailed in Table 2. The standardised assessment measures used within the service were available for 34 – 50% of those assessed (*N* = 151). Outcome measures routinely used within the service were available for approximately one quarter of those who were taken on for therapy (*N* = 98, range 21-26%).

Measure	Number available (%)	Number missing (%)
Intake		
PDQ	65 (43.05)	86 (56.95)
BDI	76 (50.33)	75 (49.67)
BAI	72 (47.68)	79 (52.32)
CORE	69 (45.70)	82 (54.30)
Difficulty rating	60 (39.74)	91 (60.26)
SSCT	55 (36.42)	96 (63.58)
Urgency/severity	52 (34.44)	99 (65.56)
Post treatment		
PT BDI	25 (25.51)	73 (74.49)
PT BAI	25 (25.51)	73 (74.49)
PT CORE	21 (21.43)	77 (78.57)

Table 2: Missing Data Analysis

Note. PDQ = Personality Disorder Questionnaire-4, BDI = Beck Depression Inventory, BAI = Beck Anxiety Inventory, CORE = Clinical Outcome s in Routine Evaluation-Outcome Measure, Difficulty rating = Level of therapist experience required to work with individual, SSCT = Suitability for CBT total score, Urgency = Current and predicted consequences associated with mental health difficulty

Data analyses

Statistical analyses were undertaken using SPSS. The final dataset comprised the scale total scores rather than individual scale item scores (electronic patient records consisted of a summary of the outcome measure total scores rather thancopies of the individual questionnaires for the majority of participants).This meant that it was not possible to ascertain whether there were missing items or erroneous values within each individual questionnaire, or whether errors had been made computing the total score. Prior to undertaking the analyses descriptive statisticswere examinedand checked for out of range values (Table 2). Pearson correlations between the key study variables were then examined. This enabled an evaluation of the research questions. An alpha levelof 0.01 was set to allow for multiple testing. To enable further investigation of the relationship between personality disorder and therapy duration two further exploratory analyses were undertaken:, (a) a hierarchical regression model was computed to investigate whether the effect of PDS on therapy duration was maintained after statistically controlling for anxiety, depression and general distress and; (b) an independent samples T test was computed to compare the number of sessions attended between those who score above and below the cut-off for a clinically significant level of personality disorder (having previously ascertained that the number of sessions attended was a normally distributed variable, a pre-requisite for this parametric test). These analyses were exploratory in nature due to the small sample size (the result of missing data). The intention of the planned analyses was to explore initial patterns in the available data, in this opportunity sample, with a view to conducting future planned research, following improvement of data collection protocol within the service.

Measure	Mean (SD)	Range
Difficulty	2.43 (.93)	1-5
SSCT	33.12 (5.23)	22-45
Urgency/Severity	5.24 (1.22)	3-8
PDS	39.17 (14.26)	1-67
Intake BDI	25.90 (9.41)	6-46
Intake BAI	20.51 (11.81)	2-51
Intake CORE	69.94 (23.32)	14-123
End BDI	13.50 (7.55)	2-28
End BAI	1-37 (9.31)	1-37
End CORE	8-86 (22.40)	42-67

Table 3: Descriptive Statistics for Key Study Variables

Note. PDS = Personality Disorder Questionnaire-4 score, Difficulty rating = Level of therapist experience required to work with individual, SSCT = Suitability for CBT total score, Urgency = Current and predicted consequences associated with mental health difficulty, Intake BDI = Beck Depression Inventory at assessment, Intake BAI = Beck Anxiety Inventory at assessment, Intake CORE = Clinical Outcome s in Routine Evaluation-Outcome Measure at assessment, End BDI = Beck Depression Inventory at treatment end, End BAI = Beck Anxiety Inventory at treatment end, End CORE = Clinical Outcome s in Routine Evaluation-Outcome Measure at treatment end.

Table 4

Correlations Between the Key Study Variables

Variable	1	2	3	4	5	6	7	8	9	10	11	12	13	14
1. Gender	1	-.02	.20	-.17	.16	.03	.11	.11	.03	.14	-.03	-.02	-.14	.18
2. Age		1	.27*	-.20	.07	.04	.05	-.09	-.04	.09	-.28	.16	.20	.13
3. Difficulty			1	-.13	.08	.28	.28	.20	.14	-.03	-.36	.04	.23	.21
4. SSCT				1	.25	.15	-.28*	-.02	-.21	.24	.51	-.16	.18	.02
5. Urgency/Sev					1	-.01	.17	.27	.31*	-.18	-.15	.01	.22	.05
6. PDS						1	.38**	.20	.22	.45*	.29	.57*	.42**	-.04
7. Intake BDI							1	.48***	.79***	.44*	.38	.45*	.37**	.21
8. Intake BAI								1	.55***	.22	.60***	.55*	.44***	-.04
9. Intake CORE									1	.37	.21	.55*	.33*	.06
10. End BDI										1	.48*	.80*	.34	.13
11. End BAI											1	.78***	.47*	-.29
12. End CORE												1	.42	-.34
13. Total sessions													1	.17
14. Attendance														1

Note. n = 8 – 151 due to missing data.

Note. PDS = Personality Disorder Questionnaire-4 score, Difficulty rating = Level of therapist experience required to work with individual, SSCT = Suitability for CBT total score, Urgency = Current and predicted consequences associated with mental health difficulty, Intake BDI = Beck Depression Inventory at assessment, Intake BAI = Beck Anxiety Inventory at assessment, Intake CORE = Clinical Outcome s in Routine Evaluation-Outcome Measure at assessment, End BDI = Beck Depression Inventory at treatment end, End BAI = Beck Anxiety Inventory at treatment end, End CORE = Clinical Outcome s in Routine Evaluation-Outcome Measure at treatment end.

* p< .05, ** p< .01, *** p< .001

Correlations between the study variables are described in Table 4. In summary, there was no statistically significant relationship between levels of personality disorder and clinician assigned ratings of suitability for CBT (research question 1), $r = .15$, $p = .30$, ($n = 47$). The relationship between the clinician assigned combined urgency/severity rating and PDS disturbance was not statistically significant (research question 3), $r = -.01$, $p = .97$, ($n = 45$). There was a statistically significant positive correlation between personality disorderand therapy duration (number of sessions attended, research question 4), whereby higher levels of personality disorder were associated with an increased number of therapy sessions, $r = .42$, $p = < .01$, ($n = 46$).

A hierarchical multiple regression analysis was conducted in which, intake personality disorder, depressive symptoms (BDI), anxiety symptoms (BAI) and overall distress (CORE) were entered simultaneously (i.e. the effect of other variables which were statistically significantly correlated with therapy duration were statistically controlled), with the total number of therapy sessions completed as the criterion variable (Table 5). The regression model was statistically significant, $F = 4.51$, $p < .01$. Together, the independent variables accounted for 33% of variance in the number of sessions attended. Of the criterion variables, only PDS retained a statistically relationship with therapy duration, after controlling for the other variables.

Table 5

Summary of Hierarchical Regression Analysis testing whether PDS, Depression, Anxiety and General Distress Predict Total Therapy Sessions

Predictor	B	T	R^2	R^2_{adj}	Df
PDS	.40	3.19**	.33	.26	36
Intake BDI	-.20	-.65			
Intake BAI	.20	1.45			
Intake CORE	.07	.52			

Note. PDS = Personality Disorder Questionnaire-4 score, Intake BDI = Beck Depression Inventory at assessment, Intake BAI = Beck Anxiety Inventory at assessment, Intake CORE = Clinical Outcome s in Routine Evaluation-Outcome Measure at assessment.*n*= 41

** $p < .01$

To help contextualise the finding that PDS predicts increased therapy sessions (Table 6), a further analysis was undertaken to evaluate whether there was a statistically significant difference in the number of therapy sessions attended between those who scored above and below the clinical cut-off on the PDS measures (the usual cut-off for a clinically significant PD, Table 6).On average, participants with PDS above 50 (the usual cut-off for a clinically significant PD) attended significantly more therapy sessions than those with PDS below the clinical cut-off (Table 5). Results from an independent samples T test indicated that the difference in number of therapy sessions attended between those who attained PDS of 50 and above, compared to those who attained scores of below 50 was statisticallysignificant, $t(44) = -2.91$, $p < .01$.

Table 6

Mean number of therapy sessions for those with PD scores above and below the clinical cut-off

Intake PDS	Mean number of therapy sessions attended (SD)	N
< 50	16.18	37
≥ 50	27.11	9

A further analysis was undertaken to evaluate whether personality disorder influenced attendance rates (research question 4 part 2). "Attendance rate" was operationalised as the proportion of the total sessions recorded (including sessions which were attended, cancelled and did not attend, DNA) which were attended. The relationship between personality disorder and therapy attendance was not statistically significant, $r = -.04$, $p = .82$ ($n = 46$). Finally, correlations between personality disorder and post-treatment measures were examined. Level of personality disorderwas not significantly correlated with post-treatment general distress($r = .57$, $p < .05$, $n = 18$),depressive symptoms ($r = .45$, $p = .04$, $n = 21$), or post-treatment anxiety ($r = .29$, $p = .21$, $n = 21$).

6. Discussion

6.1 Audit of Assessment and Outcome Measurement within the Maudsley Psychotherapy Service

The audit results indicated that standardised assessment measures were not available for between 50% (BDI) and 66% (SSCT) of the total number of individuals assessed in 2007 (n = 151), and that post-treatment (outcome) measures were not available for between 75% (BDI and BAI) and 79% (CORE) of those who went on to engage in therapy (n = 97).Implications of not routinely collecting assessment and outcome data can be considered with reference to the rationale for this outlined in the introduction (Johnston & Gowers, 2005; Sperlinger, 2000). In summary, monitoring therapy outcomes is necessary in order to ensure that services are meeting patient needs, and being delivered in the most effective manner. Moreover, routinely collecting and evaluating assessment and outcome data underpins the development of evidence based practice.

Difficulties in the collection of assessment and outcome data are a common problem across mental health services. The literature has highlighted some key impediments to the routine measurement of assessment information and clinical outcomes, which could provide a starting point for further investigation of specific obstacles to this within the Maudsley Psychotherapy Service. For example, practical constraints and implementation issues (e.g. increase in workload, administration and IT constraints, Mellor-Clark, et al.,1999) and negative clinician beliefs (e.g. beliefs regarding the process of assessment and outcome measurement, specific measures used and the measurability of the constructs assessed, Johnston & Gowers, 2005) were identified as obstacles to assessment and outcome measurement in previous studies.

Drawing on what is known about the Maudsley psychotherapy service's existing procedures and the service structure, hypotheses regarding specific obstacles to routinely administering and logging assessment and outcome measures within this service can be proposed: (a) There is currently no protocol within the service for logging assessment and outcome measures (some practitioners include this

information within a text description of the session, others upload scanned copies of measures, and, in some cases, the information may be retained in hard copy format only). Thus, even where questionnaires may have been administered, they are often stored in a format which means that they are inaccessible for future data analysis and service evaluation; (b) the computerised patient database used by the service (ePJS) is not configured to enable logging assessment and outcome questionnaires(of the measures used, only one, the CORE, can be logged on ePJS using an on-line form, which automatically generates scoring). This contrasts to the database system used within IAPT services (IAPTUS), whereclinicians are required to upload weekly scores for a range of standardised measures (assessing depression, anxiety, and social functioning; (c) Because the Maudsley Psychotherapy Service comprises a number of trainee clinicians on placement (i.e. temporary team members) there is an ongoing requirement to induct new staff members into the use of assessment and outcome measures. This could be an obstacle to the routine collection and logging of assessment and outcome measures if there is not an induction procedure which includes specific training in which measures to use, how and when they are administered, and how assessment and outcome data should be recorded.

The IAPT service Data Standard provides a useful framework for improving outcome measurement, and offers some specific recommendations regarding how to do this (IAPT data handbook, p. 9). These could be adapted to inform developing an "assessment and outcome measurement protocol"for the Maudsley psychotherapy service. Recommendations suggested in the IAPT Data Standard include: (a) identifying a data collection lead responsible for the system of data collection as a whole and for ensuring that data is used effectively within service; (b) reviewing what information needs to be collected (results from the current evaluation might help inform decision making regarding the clinical utility of current measures used), and; (c) ensuring that team members are trained in the importance of data collection and have access to relevant documentation and technical support. The current audit results provide a baseline of assessment and outcome measurement within the service. It is recommended that this audit of assessment and outcome measurement is repeated, to

enable assessing whether routine assessment and outcome measurement increases following implementation of measures to improve levels of data collection.

6.2 Summary of Exploratory Analysis Findings

6.2.1 Relationship Between Personality disorder and Suitability for CBT scores

High levels of personality disorderwere not significantly associated with lower clinician ratings of an individual's suitability to engage with CBT (low SSCT scores). Given that the SSCT measure has demonstrated reliability as a predictor of therapy engagement and outcomes (Safran et al., 1993), the finding that high levels of personality disorder were not associated with reduced ratings of patient suitability for CBT challenges the idea, held by many clinicians (Mulder, 2002), that personality disorderis an impediment to the application of CBT for treatment of Axis I disorder. Moreover, the evaluation results are consistent with findings from a range of previous empirical studies which have demonstrated that CBT is an appropriate therapeutic modality working with individuals who have Axis I disorder in the context of high levels of personality disorder(Dreeson & Arntz, 1998; Dreesen, et al., 1994, Kuyken, et al., 2001). The lack of a relationship between perceived suitability and personality disorder could reflect that this is a specialist service which includes staff with a high level of experience and expertise working with Axis I disorders in the context of personality disorder. The results should be interpreted with caution because it cannot be precluded that those for whom data was not available were both more complex and rated as having lower suitability for CBT.

6.2.2 Relationship Between Personality disorder and Case Difficulty Ratings

Higher PDS scores were not significantly correlated with clinician ratings of case difficulty. This finding suggests that increased self-report of personality disorder is not, in itself, a reliable marker of case complexity and the degree of therapist experience which is warranted. In making the assessment of case difficulty clinicians are likely drawing on the wealth of both verbal and non-verbal information attained during the clinical assessment interview. The finding that personality disorder is not associated with perceived level of case difficulty leaves unresolved whether those

with higher levels of personality disorder benefit from working with more experienced therapists (i.e. whether therapist experience moderates the impact of PD on post-treatment symptoms). It remains a possibility that more experienced therapists might attain better therapeutic outcomes with those with higher PD scores.

There is currently a paucity of empirical dataregarding the impact of therapist experience on CBT outcomes for Axis I disorder in individuals with PD. However, results from one previous depression trial which compared the efficacy of CT versus anti-depressant medication (ADM), and which included a high proportion (74%) of individuals with PD (Elkin, et al., 1989) indicated that cognitive therapy (CT) was as effective as psychopharmacology when individuals were allocated to an experienced therapist (one of the trial sites), but that CT was less effective than ADM when individuals received therapy from less experienced therapists. In their review of the treatment and prevention of depression, Hollon, Thase, and Markowitz(2002, p. 62) concluded that 'therapist's expertise makes a greater difference the more difficult the depression is to treat'. Further investigation is warranted to investigate whether there is an interaction between therapist experience, personality disorder and therapy outcomes.

6.2.3 Relationship between Personality disorder and Severity/Urgency Ratings

The results revealed a non significant relationship between personality disorder and severity/urgency ratings, an index of the current and anticipated consequences of an individual's mental health difficulties on their functioning (e.g. risk of suicide, hospitalisation, loss of job, impact on relationship, risk of children being taken into care, relapse of illness etc. i.e. an index of social and interpersonal functioning). This finding conflicts with substantive evidence from a range of empirical and epidemiological studies which have evidenced a relationship between personality disorder and impaired social functioning(Coid, Yang, Tyrer, Roberts, & Ullrich, 2006; Newton-Howes, Tyrer, & Weaver, 2008; Oltmanns, Melley, & Turkheimer, 2002; Skodol, et al., 2011).

The lack of relationship between personality disorder and severity/urgency ratings is surprising because disrupted social and occupational functioning forms part

of the general definition of personality disorder in the Diagnostic and Statistical Manual of Mental Disorders (DSM-IV-TR, American Psychiatric Association, 2000), and is implicated in the diagnoses for specific personality disorders (e.g. Borderline Personality Disorder, includes diagnostic criterion of 'a pattern of unstable and intense interpersonal relationships characterised by alternating between extremes of idealisation and devaluation', (p.710). This raises questions about the validity and clinical utility of the simplistic severity/urgency rating used within the service. One way in which the urgency/severity measure could be insensitive to meaningfully measuring individual functioning is that a clinician could assign a low urgency rating due to the patient receiving a high level of support from other sources (e.g. CMHT).

6.2.4 Personality disorderand Therapy Duration (hypothesis 4) and Poorer Attendance Rates

There was a statistically significant positive correlation between personality disorder and therapy duration (number of sessions attended), whereby higher levels of personality disorder were associated with an increased number of therapy sessions. Individuals with scores above the clinical cut-off for personality disorder (scores ≥ 50), received significantly more therapy sessions (M = 27.11) compared to those with levels of personality disorder below the clinical cut-off (M = 16.18). Moreover, the relationship between personality disorder and therapy duration was maintained after statistically controlling for the effect of baseline depressive symptoms, anxiety and general distress (all of which were significantly positively correlated with longer therapy duration). Understanding that PDS predicts longer therapy duration could have clinical utility in relation to therapist workload planning and waiting list management, and could also facilitate setting patient expectations about the likely duration of therapy.

The result that elevated personality disorder is associated with a greater number of therapy sessions is consistent with previous findings which indicate that co-morbid PD slows the process of therapeutic change (Marchand, Goyer, Dupuis, & Mainguy, 1998). However, the finding contrasts to other results which indicate that therapeutic outcomes in the treatment of Axis I disorders in those with and without

PD are equivalent in therapeutic treatments of a fixed duration (Baer, et al., 1992; Black, Wesner, Gabel, Bowers, & Monahan, 1994), and that complexity in therapy (defined as increased therapy modifications, revisions and problems, which are likely to necessitate more therapy sessions) is not predicted by increased personality disorder(Jones, Burrell-Hodgson, Tate, & Fowler, 2006).

Interestingly, personality disorderdid not predict poorer attendance rates, i.e. higher levels of personality disorder were not associated with a greater number of therapy sessions being cancelled or not attended. This finding contrasts to results from one previous study(Person, et al., 1988) which indicated that those with a personality disorderwere more likely to drop out of treatment, but is consistent with findings from another study (Fals-Stewart & Lucente, 1993) in which there were no differences in number of scheduled sessions which were missed between individuals with elevated levels of personality disorderand those without elevatedpersonality disorder. It can only be speculated why personality disorderresults in increased drop-out in some studies but not others. Thediscrepancy between study results could be due to differences in the delivery of therapy (e.g. adapting therapy to accommodate presence of PD versus delivery of standardised CBT protocol), service settings (e.g. Persons et al., study participants were patients in a private practice), therapist factors (e.g. level of therapist expertise) and/or other relevant patient factors (e.g. demographic factors). Further investigation is required to increase understanding of which other therapist, therapy and patient factors predict poor attendance and therapy drop-out within the Maudsley Psychotherapy Service.

6.2.5 Personality disorderand Therapy Outcomes (Post-Treatment Depression, Distress and Anxiety)

Higher PDS at the intake assessment were not correlated with higher levels of post treatment depressive symptoms, general distress or with higher levels of anxiety post treatment. Due to the small sample size, the analysis was exploratory in nature, and the results should therefore be interpreted with caution. Nonetheless, it is encouraging that within the context of this specialist service, PD does not appear to be associated with poorer clinical outcomes in terms of residual symptoms of distress.

The analysis warrants replication with a larger sample, which could readily be achieved when service implements measures to improve its routine data collection.

6.3 Measurement Issues and Recommendations

The following section summarises issues pertinent to the conceptualisation and measurement of personality disorder and therapy outcomes.

6.3.1 Assessment of PD

Self-report versus Semi-Structured Interview Assessment of Personality disorder: Semi-structured interview is considered to be the "gold standard" method for assessment of personality disorder (Dreeson & Arntz, 1998). Arguably, semi-structured interviews (e.g. Structured Clinical Interview for DSM-IV, First, Spitzer, Gibbon, & Williams, 1997) are superior to self-report questionnaires, because they are less likely to be influenced by state factors (e.g. depression and anxiety). However, as noted in the introduction, an issue with the SCID is poor discriminant validity (Blais & Norman, 1997). To mitigate difficulties conceptualising and measuringpersonality disorder, Vallis et al. (2002) incorporated an independent-rater (SCID-II) and self-report (Millon Clinicial Multi-axial Inventory Revised, MCMI-II) method, in a study which investigated the relationship betweenpersonality disorder and SSCT. Vallis et al. (2002) reported onlya modest degree of correlation(23% shared variance, $r = 0.48$, $p = <.01$) between a clinician rated (Personality Disorder Examination) and self-report measure (Millon Clinical Multiaxial Inventory, MCMI-II) of personality disorder.This highlights the extent to which differences in the way thatpersonality disorder is defined and measured could influence the pattern of results obtained assessing the relationship between personality disorderand other assessment and outcome measures. Interestingly however, Vallis et al. found that elevated personality disorder, assessed using both the self-report measure and semi-structured interview, was associated with lower SSCT scores. Whilst inclusion of an additional semi-structured interview might be desirable from a research perspective, it is unlikely to be practicable in a busy clinical service.

Overall personality disorder (i.e. continuous variable) versus Individual personality disorder categories (i.e. categorical variable): Studies which have investigated the relationship betweenpersonality disorder, suitability for CBT and therapy outcomes differ according to whether they have used a composite index of overall personality disorder (i.e. PDS which formed the basis for results presented in this evaluation), categorical sub-types of personality disorder (Fals-Stewart & Lucent (1993), or specific features of personality which correspond to distinct personality profiles (e.g. avoidant beliefs and excessive dependency, Kuyken, et al., 2001).

Findings from a number of studies indicate that sub-types of personality disorder differentially influence suitability for CBT and treatment outcomes. Thus, Fals-Stewart and Lucent (1993) found that individuals categorised as having a "cluster 4" personality type (characterised by high scores on schizoid, avoidant, dependent and schizotypal sub-scales of the MCMI, categorisation was obtained using a hierarchical agglomerative cluster analysis) were more likely to refuse participation in psychological therapy for OCD, and showed less improvement in OCD symptoms post-treatment than those with other personality disorder types or those without personality disorder ("cluster I" defined as attaining low scores across all MCMI sub-scales). Conversely, "cluster II" individuals (characterised by high scores on the dependent and compulsive MCMI sub-scales) attained and maintained equivalent levels of improvement in OCD symptoms to those without personality disorder. In another study, Kuyken, et al., (2001) hypothesised and found that avoidant beliefs were a specific personality variable which inhibited improvement in depression during cognitive therapy, whereas, excessive dependency did not predict reduced change in depression, after controlling for baseline depressive symptoms.

The finding that urgency/severity was not associated with elevated personality disordercould reflect a limitation of using a generalised measure ofpersonality disorder. Previous findings indicate a differential effect of personality disorderon individual functioning by sub-type. In one previous study schizotypal and borderline personality disorders were more strongly associated with impaired social functioning than avoidant disorders (Skodol, et al., 2002).In another study, higher scores on a

measure of histrionic personality disorder were positively associated with adaptive social and leisure functioning (Oltmans, et al., 2007).Thus, it is perhaps an oversimplification to assume that personality disorderper se is indicative of clinically significant impairment in functioning (although, in at least one previous study, cluster A, B and C personality disorders were all correlated with impaired functioning, Newton-Howes et al., 2008).

A limitation of the approach to measuring personality disorderwithin the Maudsley psychotherapy service is that individual PDQ-4 items are not recorded electronically (i.e. in a format accessible to subsequent data analysis), and sub-scale scores are not routinely computed and recorded. Therefore, it was not within the scope of the current evaluation to investigate the relationship between different sub-types of personality disorder, suitability for CBT and other assessment and outcome measures. However, this could form a focus for future investigation. To enable this more detailed analysis it would be useful if individual PDQ-4 items and sub-scale scores were routinely electronically recorded.

6.3.2 Assessment of Suitability for CBT

An identified issue with the SSCT (composite total score) is that it incorporates items which are relevant to engagement with CT/CBT specifically (e.g. accessibility of cognitions), and those which are pertinent to engaging with psychological therapy more generally (e.g. alliance potential). In order to address this issue, Vallis, et al., (2000) computed two separate ‘suitability for therapy’ scores, in addition to the total score which was used in the analyses reported in this evaluation; a ‘general sub-scale’ (incorporating alliance potential, security operations and optimism-pessimism about therapy) and a ‘CT specific’ sub-scale (including accessibility of cognitions, awareness and differentiation of emotion, acceptance of personal responsibility for change, compatibility with the CT rationale, chronicity and focality).

Vallis et al. found that the negative association between personality disorderand suitability for therapy was strongest and most consistent (i.e. the finding

was replicated across both interview and questionnaire measures of personality disorder) for the 'alliance potential' item, a factor relevant to assessing suitability for therapy generally (and which is possibly more pertinent to therapeutic modalities which place greater emphasis on the therapeutic relationship, e.g. psychodynamic therapy), rather than being related to suitability for CBT specifically. Of the different 'suitability for CT' items assessed,personality disorderwas significantly correlated with the 'personal responsibility' and 'compatibility with CT rationale' items (questionnaire measure of PD only) and with the chronicity item (interview assessment of PD only), but was not significantly correlated with the other CT suitability specific items.

Individual SSCT items are not currently recorded electronically within the Maudsley Psychotherapy Service, and project time constraints limited undertaking the additional data entry necessary to enable computation of separate SSCT sub-scale scores. In future, routinely recording individual SSCT items and/or computing and recording sub-totals for the general therapy suitability and CBT therapy suitability scales would enable investigating the relationship between personality disorderand more specific features of suitability for CBT.

In previous studies the SSCT has demonstrated good reliability (Vallis et al., 2000). However, reliability ratings are not currently generated for SSCT scoring within the Maudsley Psychotherapy Service. Thus, it is not possible to ascertain from the current results to what extent SSCT remains stable over time or to ascertain whether different therapists are using the same approach to rating suitability for CBT (if ratings were not consistently applied between therapists this undermines the validity of the measure). In future, it would be useful if a procedure for double rating a sub-sample of assessment interviews is put in place. In addition, therapists could also be encouraged to re-rate the SSCT mid-way through therapy to enable checking test-re-test reliability.

6.3.3 Assessment of case difficulty

Extending the current evaluation results, which address the relationship betweenpersonality disorder and the perceived level of therapist experience required (as ascertained during a preliminary assessment interview), it would be interesting to explore whether therapist experience level is a factor which predicts better therapy outcomes in those with high levels ofpersonality disorder. This supplementary analysis would provide a more definitive answer to the question of whether the service should use personality disorderto inform the allocation of therapists to patients. To enable this analysis would necessitate systematically recording the experience level of therapists assigned to work with individual patients in addition to the estimated level of therapist experience required.

6.3.4 Assessment of Severity/Urgency

The measure of severity/urgency used in the Maudsley Psychotherapy service was computed from two single 5-point scales, intended to give aclinical marker, at assessment, of current and future adverse consequences associated with an individual's difficulties. Inclusion of an additional measure which assesses functioning across different domains would enable a more valid assessment of the impact of personality disorderon how individuals manage their daily lives. IAPT services currently use the Work and Social Adjustment Scale (a self-report measure which forms part of the IAPT assessment toolkit). This simple scale incorporates five items assessing performance in the domains of work, home management, social leisure activities, private leisure activities, and family relationships. The measure is quick to administer and is intended to be used over the course of therapy (in IAPT on a weekly basis). Incorporating this measure within the Maudsley Psychotherapy Service assessment and outcome measurement protocol would enable evaluating whether personality disorderinfluences improvement in functioning over the course of therapy.

6.3.5 Assessment of Clinical Outcomes

Therapy Attendance: One limitation of the measure of therapy attendance used in the evaluation is that it cannot be inferred whether or not an individual discontinued

treatment early.Rather, the measure of attendance used in the current study was based on the number of sessions cancelled or not attended (DNA),as a proportion of the total number of sessions attended. Information regarding whether or not an individual discontinued treatment early was not routinely recorded. Similarly, the available data did not enable identification of individuals who were offered therapy but who opted not to engage (the reason for an individual not being taken on for treatment following assessment was not systematically recorded). Fals-Stewart and Lucente (1993) found that individuals with elevated levels of schizoid and schizotypal personalities were more likely to refuse to participate in treatment than those without elevatedpersonality disorder or with other sub-types ofpersonality disorder. This leaves unresolved whether PDS was a factor which influenced whether an individual who was assessed and offered therapy opted in or out of treatment. However,an examination of the mean level of personality disorderin those who were assessed and taken on for therapy (M = 40, SD = 12.97, n = 48), compared to those who were assessed but did not go on to engage in therapy (M = 37, SD = 17.66, n = 17), did not support this hypothesis.

*Assessment of Post-treatment Clinical Outcomes:*For the purposes of the evaluation, clinical outcomes were conceptualised as the reported reduction in symptoms of depression, anxiety and general distress. This focus on symptom change does not enable evaluation of patient engagement with the therapeutic process and the quality of the therapeutic relationship. The Therapy Process and Outcome Questionnaire (TPOQ; Jones, et al., 2006) is a measure, designed for use in primary care, which could potentially be adapted for use in the Maudsley Psychotherapy Service. The measure incorporates items assessing the quality of the therapeutic alliance and complexity in therapy. Jones et al. (2006) found that an ‘inward looking and emotionally distanced’ personality style was associated with more problems in the therapeutic relationship, whereas personality disorderdid not predict increased complexity in therapy. Inclusion of this measure at treatment end would enable evaluating whether personality disorderis a factor which not only influence therapy outcomes but which also affects the therapeutic process. It would also be interesting

to evaluate the relationship between SSCT scores at assessment and subsequent therapist ratings on the TPOQ.

7. Conclusion

The service evaluation has highlighted difficulties in the routine collection of assessment and outcome measures within the service. A number of recommendations have been made which could help improve rates of assessment and outcome measurement. Further work is required to more fully investigate specific obstacles to data collection within the service. The preliminary analyses reported indicate that ratings of personality disorder were not associated with reduced ratings of suitability for CBT, increased case difficulty ratings, or urgency and severity scores. Neither did PDS predict higher post treatment depression and anxiety. The results warrant replication with a larger sample before firm conclusions can be drawn. Nonetheless, it is encouraging that, in this small sample, increased personality disorder was not associated with higher levels of residual symptoms following CBT. From a service planning perspective, it could be useful to understand that self-report of personality disorder predicts a longer treatment duration. Further research and evaluation including investigation of specific factors which predict good therapeutic outcomes for individuals with higher levels of personality disorderis warranted, to ensure that this vulnerable client group receive optimal benefits from psychological services.

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Appendices

Appendix 1. Suitability for Short-Term Cognitive Therapy (SSCT) Rating Procedure

1. Accessibility of automatic thoughts

Score	Item	
0	Do not rate. Insufficient information.	
1	Patient appears to be completely unable to gain access to automatic thoughts.	
2	Patient is able to gain access to one or two automatic thoughts.	
3	Patient is able to gain access to some automatic thoughts.	
4	Patient is able to gain access to a number of important automatic thoughts.	
5	Patient readily gains access to central automatic thoughts.	

2. Awareness and differentiation of emotions

Score	Item	
0	Do not rate. Insufficient information.	
1	Patient appears completely unable to recognise fluctuations in emotional quality or intensity between sessions and is not able to verbalise changes in emotion during session. Appears completely cut-off from emotional experience.	
2	Patient reports some fluctuations in quality and intensity of mood outside of session, but with considerable difficulty.	

3	Patient is able to report some fluctuation in quality and intensity between sessions, and displays some ability to experience those feelings in session.	
4	Patient can identify and experience fluctuation in emotional quality and intensity both in and out of session. Patient shows some ability to use emotions as a vehicle for further self-exploration.	
5	Patient is extremely good at labelling and differentiating emotional experience, both in and out of session, and processes experience in session in an emotionally authentic fashion. Patient show clear ability to use emotions in session as vehicle for further self-exploration.	

3. Acceptance of personal responsibility for change

Score	Item	
0	Do not rate. Insufficient information.	
1	Patient does not accept responsibility for change, feeling instead that change will come from some external source (e.g. magical solution, the right combination of medication, the therapist).	
2	Patient claims to be able to facilitate change through his or her actions, but there is a hackneyed quality or lip-service in these remarks.	
3	Patient has some awareness that his or her efforts are important in the change process, but is honestly fluctuating between this recognition and an externalising stance.	

4	Patient generally accepts responsibility for the change process but may lapse into an externalising stance slightly or occasionally.	
5	Patient recognises and endorses the role his or her efforts will play in the change process, for example: 'you can point me in the right direction, but I know that I will have to do the work myself', 'I know that I'm the only one who can help myself'.	

4. Compatibility with the cognitive rationale

Score	Item	
0	Do not rate. Insufficient information.	
1	Patient does not see a relationship between thinking and feeling and/or clearly subscribes to an alternative model (e.g. biological or psychoanalytic, which he/she views as incompatible) or clearly rejects central tasks (e.g. homework, self-monitoring) or goals (for example believes that 20 sessions will be inadequate). Patient rejects the value of the central tasks.	
2	Patient has difficulty understanding the cognitive rationale and/or in seeing the value in the tasks of cognitive therapy.	
3	Patient appears to understand the cognitive rationale, but still has some reservations or questions about the model or its applicability.	
4	Patient responses indicate an openness to the role of cognitive factors in distress and some willingness to	

	experiment with the tasks of cognitive therapy.	
5	Patient indicates genuine acceptance of the role of cognitive factors in distress and very clearly sees the value of important tasks such as homework, monitoring cognitions, exploring the therapeutic relationship, and so forth.	

5. Alliance potential: in session evidence

Score	Item	
0	Do not rate. Insufficient information.	
1	Patient clearly exhibits a lack of trust or confidence in the interviewer or explicitly expresses negative sentiments about the interview, or appears very guarded. No evidence of any rapport is evidenced during the interview.	
2	Patient appears withdrawn or somewhat guarded or somewhat irritable or defensive. There is little evidence of engagement during the interview.	
3	Patient appears to be engaged with the interviewer but remains somewhat untrusting.	
4	There is little evidence of negative sentiments toward therapist or therapy, and the patient is reasonably involved in the interview process. There is evidence that the patient feels understood.	
5	Patient appears to be actively engaged with the therapist and seems to feel valued and understood. There appears to be an empathetic resonance or signs of mutual warmth	

	between patient and therapist.	

6. Alliance potential: out of session evidence

Score	Item	
0	Do not rate. Insufficient information.	
1	Extremely poor history of interpersonal relationships. Few if any sustained relationships, all marked with mistrust or ambivalence.	
2	Shows some evidence of capacity to establish stable relationships, but there is a marked tendency toward mistrust or ambivalence.	
3	Patient displays moderate evidence of ability to establish stable, trusting relationships but clearly lapses into a state of mistrust when conflict arises.	
4	Shows good evidence of sustained, trusting relationships with some tendency to mistrust, withdraw or avoid conflict situations.	
5	Patient may have interpersonal difficulties, but there is good evidence of sustained, trusting, intimate relationships and ability to maintain good interpersonal contact in conflict situations.	

7. Chronicity of problems

Score	Item	

0	Do not rate. Insufficient information.	
1	A nearly life long difficulty with at least one of the main complaints.	
2	Long lasting difficulties with at least one of the main complaints for at least five years.	
3	Patient reports main problems or complaints lasting most of the past two years or during at least two episodes of six months each.	
4	Patient reports that main complaints or problems have existed for more than six months, but less than two years.	
5	A relatively recent (i.e. within the past six months) onset of the main complaint.	

8. Security operations

Score	Item	
0	Do not rate. Insufficient information.	
1	The patient's security operations appear to be sufficiently disruptive to constitute a substantial barrier to the therapeutic process. For example, the patient displays marked avoidance of difficult or potential anxiety provoking areas. This style is displayed consistently with a high degree of intensity over the course of the interview.	
2	The patient displays security operations that are moderately disruptive, but there do seem to be some points at which he or she is able to deal with potentially anxiety-provoking	

	issues openly and directly.	
3	The patient displays mildly disruptive security operations. There appears to be some openness to dealing with potentially anxiety-proving topics, but the rater is left with some concern that certain operations on the part of the patient might ultimately interfere with short-term cognitive therapy.	
4	There is some evidence of disruptive security operations, but the interviewer is left with the impression that these are not major obstacles to short-term cognitive therapy.	
5	There is no reason to believe that the patient's security operations will constitute an obstacle to short-term cognitive therapy.	

9. Focality

Score	Item	
0	Do not rate. Insufficient information.	
1	The patient is unable to focus on a specific situation being worked on during the session, the style is loose and rambling, and the patient is unresponsive to the therapist's attempts to stay with the event being worked on.	
2	The patient is poor at focusing on a specific problem. There is some degree of looseness and rambling in patient's attempts to discuss the situation in particular. Therapist prompting is still needed to maintain the problem focus.	

3	The patient is able to focus on a specific problem without prompting by the therapist to stay on task.	
4	The patient shows a very good ability work within the problem focus without the therapist prompting and feels comfortable working within such a structure.	
5	The patient shows very good ability to work within the problem focus without the therapist prompting and shows an ability to work with this structured aspect of cognitive therapy to delineate or explore fully a specific situation of importance.	

Appendix 2: Urgency Rating

Score	Item	
0	Do not rate. Insufficient information.	
1	No indication that the problem(s) will lead to any adverse consequences in the next 5 years.	
2	The problem(s) may lead to adverse consequences (e.g. suicide, hospitalisation, loss of job, relationship, risk of children being taken into care, relapse of illness) within the next 5 years if not treated.	
3	The problem(s) may lead to adverse consequences (e.g. suicide, hospitalisation, loss of job, relationship, risk of children being taken into care, relapse of illness) within the next year if not treated.	
4	The problem(s) may lead to adverse consequences (e.g. suicide, hospitalisation, loss of job, relationship, risk of children being taken into care, relapse of illness) within the next 6 months if not treated.	
5	High risk of suicide, hospitalisation, loss of job, relationship, risk of children being taken into care, relapse of illness within the next month.	

Appendix 3: Severity rating

Score	Item	
0	Do not rate. Insufficient information.	
1	Problem(s) do(es) not have any significant impact on the patient's life.	
2	The patient's life is affected by the problem to a minor degree (e.g. mild impact on work or relationships.	
3	The patient's life is affected by the problem to a moderate degree (e.g. work or relationships impaired, repeated difficulties establishing or maintaining relationships, moderate level of distress).	
4	A pervasive and severe disability resulting from the presenting problem(s) e.g. inability to work, significant loss of pleasure, major difficulties with relationships, severe level of distress.	
5	The patient's life is severely affected to the extent that he or she is unable to work or carry out normal life.	

Appendix 4: Difficulty rating

Score	Item	
1	First CBT case	
2	Novice therapist/SHO	
3	Intermediate therapist/SpR	
4	CBT therapist/CBT SpR	
5	Expert therapist	

Appendix 5: PDQ-4

PDQ-4+

Personality Questionnaire

Developed by Steven E. Hyler, M.D. of the New York State Psychiatric Institute. The items included in the PDQ-4 were adapted from the diagnostic criteria for personality disorders of the American Psychiatric Association's Diagnostic and Statistical Manual of Mental Disorders, Fourth Edition (DSM-IV) and contains items originally included in the PDQ and PDQ-R personality questionnaires. Investigators who wish to use this instrument should contact Dr. Hyler, New York State Psychiatric Institute, Unit #112, 722 West 168th Street, New York, N.Y. 10032. Telephone (212) 960-5656.
www.pdq4.com

Your name_____. _____Today's date _____ . __

Instructions

The purpose of this questionnaire is for you to describe the kind of person you are. When answering the questions, think about how you have tended to feel, think, and act over the past several years. To remind you of this, on the top of each page you will find the statement: **"Over the past several years..."**

Please answer either True or False to each item.
Where:
T (True) means that the statement is generally true for you.

F(False) means that the statement is generally false for you.

Even if you are not entirely sure about the answer, indicate "T" or "F" for every question.

For example, for the question:
xx. I tend to be stubborn. F

If, in fact you have been stubborn over the past several years, you would answer True by circling T.

If this was not true at all for you, you would answer False by circling F.

There are no correct answers.

You make take as much time as you wish.

Over the Past Several Years .....

1. I avoid working with others who may criticize me.	T	F
2. I can't make decisions without the advice, or reassurance, of others.	T	F
3. I often get lost in details and lose sight of the "big picture."	T	F
4. I need to be the center of attention.	T	F
5. I have accomplished far more than others give me credit for.	T	F
6. I'll go to extremes to prevent those who I love from ever leaving me.	T	F
7. Others have complained that I do not keep up with my work or commitments.	T	F
8. I've been in trouble with the law several times (or would have been if I had been caught).	T	F
9. Spending time with family or friends just doesn't interest me.	T	F
10. I get special messages from things happening around me.	T	F
11. I know that people will take advantage of me, or try to cheat me, if I let them.	T	F
12. Sometimes I get upset.	T	F
13. I make friends with people only when I am sure they like me.	T	F
14. I am usually depressed.	T	F
15. I prefer that other people assume responsibility for me.	T	F
16. I waste time trying to make things too perfect.	T	F
17. I am "sexier" than most people.	T	F
18. I often find myself thinking about how great a person I am, or will be.	T	F
19. I either love someone or hate them, with nothing in between.	T	F
20. I get into a lot of physical fights.	T	F
21. I feel that others don't understand or appreciate me.	T	F
22. I would rather do things by myself than with other people.	T	F
23. I have the ability to know that some things will happen before they actually do.	T	F
24. I often wonder whether the people I know can really be trusted.	T	F

Over the Past Several Years .....

25. Occasionally I talk about people behind their backs.	T	F
26. I am inhibited in my intimate relationships because I am afraid of being rejected.	T	F
27. I fear losing the support of others if I disagree with them.	T	F
28. I have many shortcomings.	T	F
29. I put my work ahead of being with my family or friends or having fun.	T	F
30. I show my emotions easily.	T	F
31. Only certain special people can really appreciate and understand me.	T	F
32. I often wonder who I really am.	T	F
33. I have difficulty paying bills because I don't stay at any one job for very long.	T	F
34. Sex just doesn't interest me.	T	F
35. Others consider me moody and "hot tempered."	T	F
36. I can often sense, or feel things that others can't.	T	F
37. Others will use what I tell them against me.	T	F
38. There are some people I don't like.	T	F
39. I am more sensitive to criticism or rejection than most people.	T	F
40. I find it difficult to start something if I have to do it by myself.	T	F
41. I have a higher sense of morality than other people.	T	F
42. I am my own worst critic.	T	F
43. I use my "looks" to get the attention that I need.	T	F
44. I very much need other people to take notice of me or compliment me.	T	F
45. I have tried to hurt or kill myself.	T	F
46. I do a lot of things without considering the consequences.	T	F
47. There are few activities that I have any interest in.	T	F

Over the Past Several Years ....

48. People often have difficulty understanding what I say.	T	F
49. I object to supervisors telling me how I should do my job.	T	F
50. I keep alert to figure out the real meaning of what people are saying.	T	F
51. I have never told a lie.	T	F
52. I am afraid to meet new people because I feel inadequate.	T	F
53. I want people to like me so much that I volunteer to do things that I'd rather not do.	T	F
54. I have accumulated lots of things that I don't need but I can't bear to throw out.	T	F
55. Even though I talk a lot, people say that I have trouble getting to the point.	T	F
56. I worry a lot.	T	F
57. I expect other people to do favors for me even though I do not usually do favors for them.	T	F
58. I am a very moody person.	T	F
59. Lying comes easily to me and I often do it.	T	F
60. I am not interested in having close friends.	T	F
61. I am often on guard against being taken advantage of.	T	F
62. I never forgot, or forgive, those who do me wrong.	T	F
63. I resent those who have more "luck" than I.	T	F
64. A nuclear war may not be such a bad idea.	T	F
65. When alone, I feel helpless and unable to care for myself.	T	F
66. If others can't do things correctly, I would prefer to do them myself.	T	F
67. I have a flair for the dramatic.	T	F
68. Some people think that I take advantage of others.	T	F
69. I feel that my life is dull and meaningless.	T	F
70. I am critical of others.	T	F
71. I don't care what others have to say about me.	T	F

Over the Past Several Years .....

72. I have difficulties relating to others in a one-to-one situation.	T	F
73. People have often complained that I did not realize that they were upset.	T	F
74. By looking at me, people might think that I'm pretty odd, eccentric or weird.	T	F
75. I enjoy doing risky things.	T	F
76. I have lied a lot on this questionnaire.	T	F
77. I complain a lot about my hardships.	T	F
78. I have difficulty controlling my anger, or temper.	T	F
79. Some people are jealous of me.	T	F
80. I am easily influenced by others.	T	F
81. I see myself as thrifty but others see me as being cheap.	T	F
82. When a close relationship ends, I need to get involved with someone else immediately.	T	F
83. I suffer from low self esteem.	T	F
84. I am a pessimist.	T	F
85. I waste no time in getting back at people who insult me.	T	F
86. Being around other people makes me nervous.	T	F
87. In new situations, I fear being embarrassed.	T	F
88. I am terrified of being left to care for myself.	T	F
89. People complain that I'm "stubborn as a mule."	T	F
90. I take relationships more seriously than do those who I'm involved with.	T	F
91. I can be nasty with someone one minute, then find myself apologizing to them the next minute.	T	F
92. Others consider me to be stuck up.	T	F
93. When stressed, things happen. Like I get paranoid or just "black out."	T	F
94. I don't care if others get hurt so long as I get what I want.	T	F

Over the Past Several Years ....

95. I keep my distance from others. T F

96. I often wonder whether my wife (husband, girlfriend or boyfriend) has been unfaithful to me. T F

97. I often feel guilty. T F

98. I have done things on impulse (such as those below) that could have gotten me into trouble. T F

Check all that apply to you:

a. Spending more money than I have ☐
b. Having sex with people I hardly know ☐
c. Drinking too much ☐
d. Taking drugs ☐
e. Eating binges ☐
g. Reckless driving ☐

99. When I was a kid (before age 15), I was somewhat of a juvenile delinquent, doing some of the things below. T F

Now, Check all that apply to you:

(1) I was considered a bully. ☐
(2) I used to start fights with other kids. ☐
(3) I used a weapon in fights that I had. ☐
(4) I robbed or mugged other people. ☐
(5) I was physically cruel to other people. ☐
(6) I was physically cruel to animals. ☐
(7) I forced someone to have sex with me. ☐
(8) I lied a lot. ☐
(9) I stayed out all night without my parents permission. ☐
(10) I stole things from others. ☐
(11) I set fires. ☐
(12) I broke windows or destroyed property. ☐
(13) I ran away from home overnight more than once. ☐
(14) I began skipping school a lot before age 13. ☐
(15) I broke into someone's house, building or car. ☐

Thank you for your time

PDQ-4
Clinical Significance Scale
Interview guide

If the patient has scored at or above threshold on any disorder evaluated, the clinician should use this interview format to assess the clinical significance of the disorder.

You have reported that the following related items are true for you:
(Read the pathological items for each disorder, one at a time, to the patient)

A. **Are any of the items not really true for you?**
Indicate which:_____ *delete any indicated items that the patient

B. **How long have these items been part of your personality?**
Less than one year ____
One to five years ____
*Most of your life, or since before age 18 ____.

C. **Have these items been part of your personality only when you have been depressed, anxious, using alcohol/drugs or physically ill or have they been there most of the time regardless of your mood, level of anxiety, use of alcohol/drugs or general state of health?**

Only when depressed ____
Only when anxious ____
Only when using alcohol/drugs ____
Only when physically ill ____
*Not related to any of the above ____

D. **In what areas have these items created difficulties for you:**
At home ____
At work ____
In relationships ____
Other (specify) _____ ____
* impairment in at least one area is required to meet D.

or

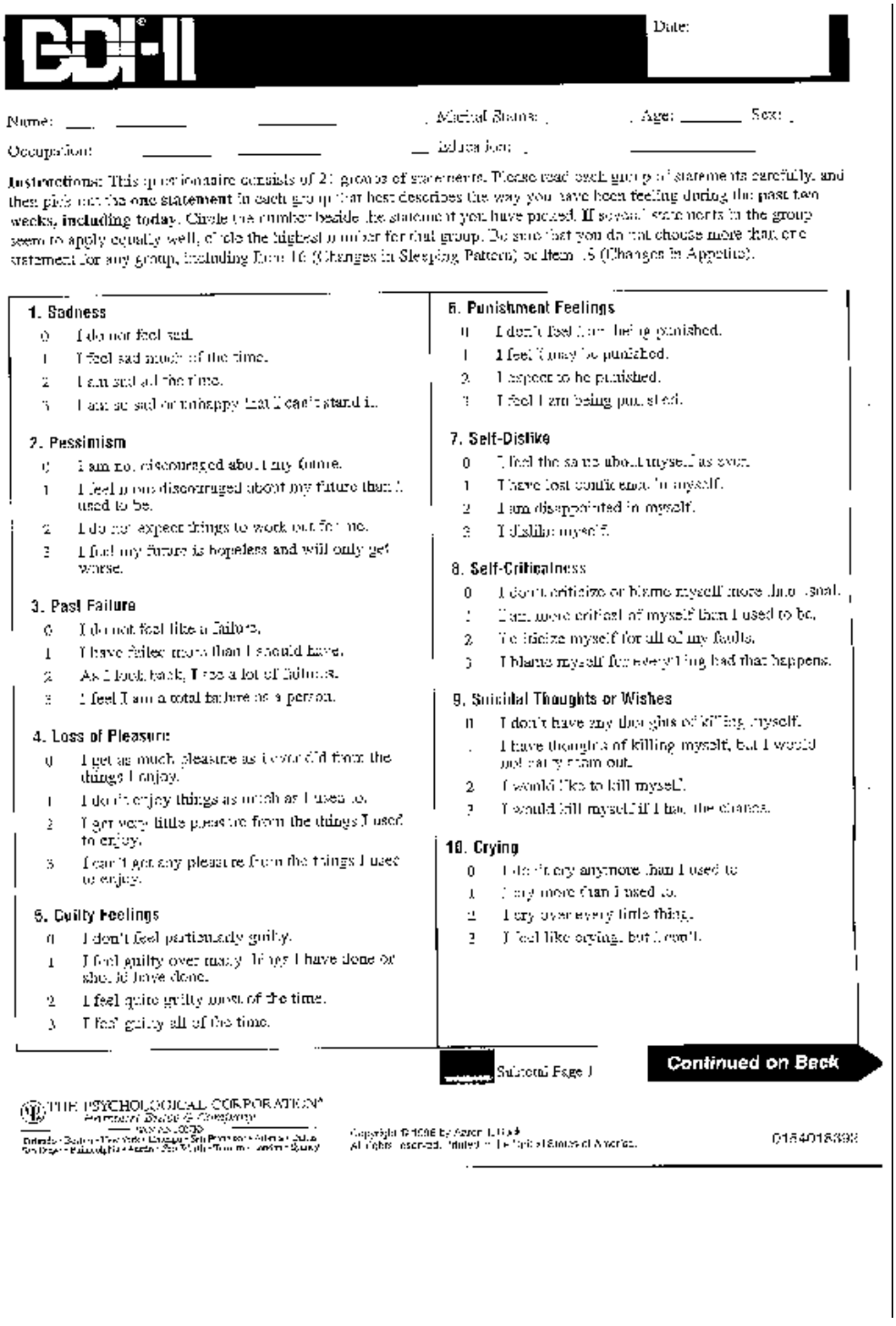
E. **Are you bothered about yourself because of the above?**
*Yes ____
No ____

*To be clinically significant the personality disorder must still meet the threshold after the patient has been given the opportunity to indicate that items were not really true (A), the disorder must be long-standing (B), the disorder must not be limited to times when the patient has been depressed, anxious, using alcohol/drugs, or physically ill (C), the disorder must either have led to impairment (D) or distress (E).

Repeat for each disorder that is above threshold.

2006

Appendix 6: Beck Depression Inventory



BDI-II

Date:

Name: _____ Marital Status: _____ Age: _____ Sex: _____

Occupation: _____ Education: _____

Instructions: This questionnaire consists of 21 groups of statements. Please read each group of statements carefully, and then pick out the one statement in each group that best describes the way you have been feeling during the past two weeks, **including today**. Circle the number beside the statement you have picked. If several statements in the group seem to apply equally well, circle the highest number for that group. Be sure that you do not choose more than one statement for any group, including Item 16 (Changes in Sleeping Pattern) or Item 18 (Changes in Appetite).

1. Sadness
- 0 I do not feel sad.
- 1 I feel sad much of the time.
- 2 I am sad all the time.
- 3 I am so sad or unhappy that I can't stand it.

2. Pessimism
- 0 I am not discouraged about my future.
- 1 I feel more discouraged about my future than I used to be.
- 2 I do not expect things to work out for me.
- 3 I feel my future is hopeless and will only get worse.

3. Past Failure
- 0 I do not feel like a failure.
- 1 I have failed more than I should have.
- 2 As I look back, I see a lot of failures.
- 3 I feel I am a total failure as a person.

4. Loss of Pleasure
- 0 I get as much pleasure as I ever did from the things I enjoy.
- 1 I don't enjoy things as much as I used to.
- 2 I get very little pleasure from the things I used to enjoy.
- 3 I can't get any pleasure from the things I used to enjoy.

5. Guilty Feelings
- 0 I don't feel particularly guilty.
- 1 I feel guilty over many things I have done or should have done.
- 2 I feel quite guilty most of the time.
- 3 I feel guilty all of the time.

6. Punishment Feelings
- 0 I don't feel I am being punished.
- 1 I feel I may be punished.
- 2 I expect to be punished.
- 3 I feel I am being punished.

7. Self-Dislike
- 0 I feel the same about myself as ever.
- 1 I have lost confidence in myself.
- 2 I am disappointed in myself.
- 3 I dislike myself.

8. Self-Criticalness
- 0 I don't criticize or blame myself more than usual.
- 1 I am more critical of myself than I used to be.
- 2 I criticize myself for all of my faults.
- 3 I blame myself for everything bad that happens.

9. Suicidal Thoughts or Wishes
- 0 I don't have any thoughts of killing myself.
- 1 I have thoughts of killing myself, but I would not carry them out.
- 2 I would like to kill myself.
- 3 I would kill myself if I had the chance.

10. Crying
- 0 I don't cry anymore than I used to.
- 1 I cry more than I used to.
- 2 I cry over every little thing.
- 3 I feel like crying, but I can't.

Subtotal Page 1

Continued on Back

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11. Agitation

0 I am no more restless or wound up than usual.
1 I feel more restless or wound up than usual.
2 I am so restless or agitated that it's hard to stay still.
3 I am so restless or agitated that I have to keep moving or doing something.

12. Loss of Interest

0 I have not lost interest in other people or activities.
1 I am less interested in other people or things than before.
2 I have lost most of my interest in other people or things.
3 It's hard to get interested in anything.

13. Indecisiveness

0 I make decisions about as well as ever.
1 I find it more difficult to make decisions than usual.
2 I have much greater difficulty in making decisions than I used to.
3 I have trouble making any decisions.

14. Worthlessness

0 I do not feel that I am worthless.
1 I don't consider myself as worthwhile and useful as I used to.
2 I feel more worthless as compared to other people.
3 I feel utterly worthless.

15. Loss of Energy

0 I have as much energy as ever.
1 I have less energy than I used to have.
2 I don't have enough energy to do very much.
3 I don't have enough energy to do anything.

16. Changes in Sleeping Pattern

0 I have not experienced any change in my sleeping pattern.
1a I sleep somewhat more than usual.
1b I sleep somewhat less than usual.
2a I sleep a lot more than usual.
2b I sleep a lot less than usual.
3a I sleep most of the day.
3b I wake up 1–2 hours early and can't get back to sleep.

17. Irritability

0 I am no more irritable than usual.
1 I am more irritable than usual.
2 I am much more irritable than usual.
3 I am irritable all the time.

18. Changes in Appetite

0 I have not experienced any change in my appetite.
1a My appetite is somewhat less than usual.
1b My appetite is somewhat greater than usual.
2a My appetite is much less than before.
2b My appetite is much greater than usual.
3a I have no appetite at all.
3b I crave food all the time.

19. Concentration Difficulty

0 I can concentrate as well as ever.
1 I can't concentrate as well as usual.
2 It's hard to keep my mind on anything for very long.
3 I find I can't concentrate on anything.

20. Tiredness or Fatigue

0 I am no more tired or fatigued than usual.
1 I get more tired or fatigued more easily than usual.
2 I am too tired or fatigued to do a lot of the things I used to do.
3 I am too tired or fatigued to do most of the things I used to do.

21. Loss of Interest in Sex

0 I have not noticed any recent change in my interest in sex.
1 I am less interested in sex than I used to be.
2 I am much less interested in sex now.
3 I have lost interest in sex completely.

12 13 14 15 16 17 18 19 20 21 0 1 2 3

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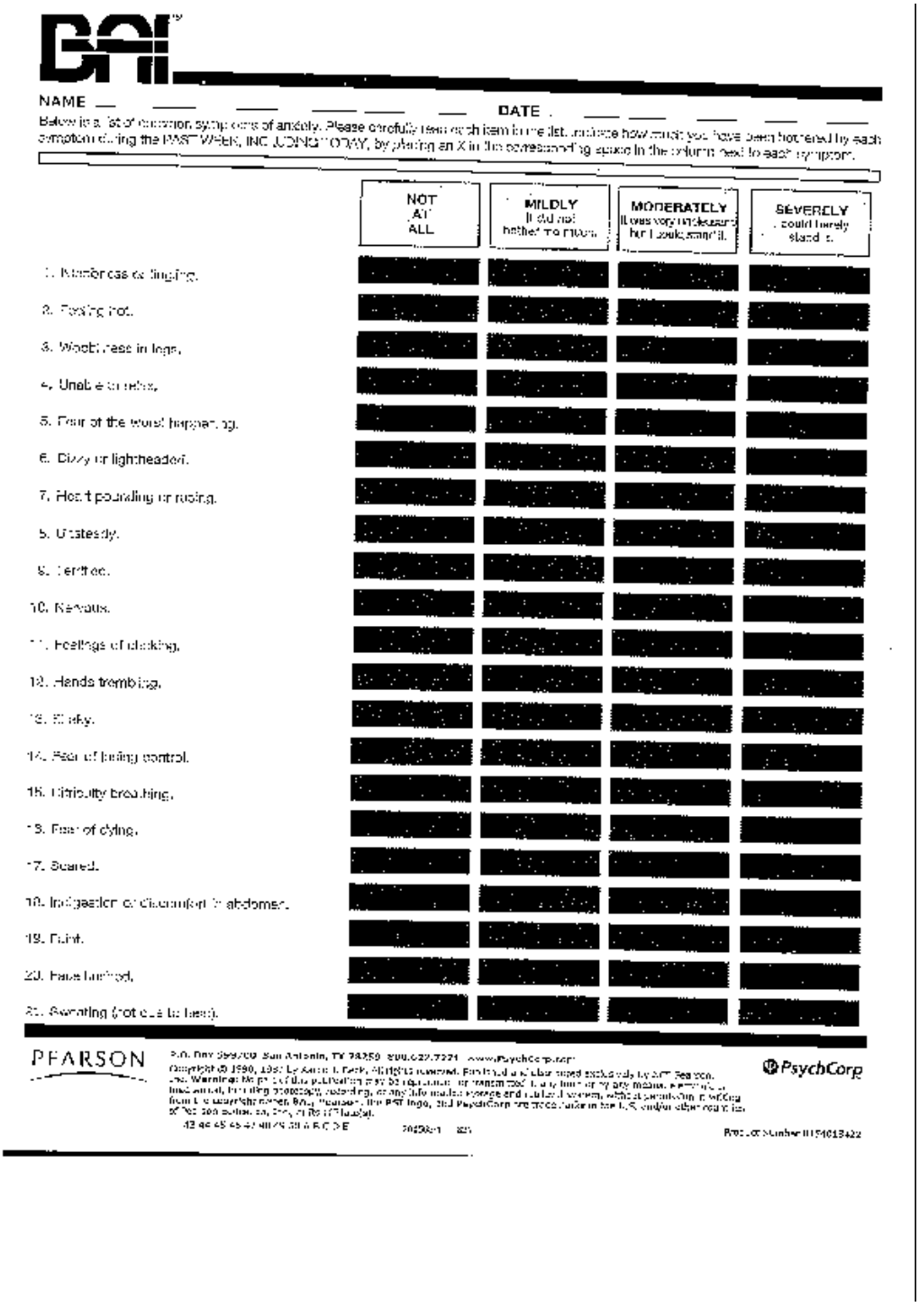
[redacted] Subtotal Page 2
[redacted] Subtotal Page 1
[redacted] Total Score

Appendix 7: Beck Anxiety Inventory



BAI™

NAME _____ DATE _____

Below is a list of common symptoms of anxiety. Please carefully read each item in the list. Indicate how much you have been bothered by each symptom during the PAST WEEK, INCLUDING TODAY, by placing an X in the corresponding space in the column next to each symptom.

	NOT AT ALL	MILDLY It did not bother me much.	MODERATELY It was very unpleasant but I could stand it.	SEVERELY I could barely stand it.
1. Numbness or tingling.				
2. Feeling hot.				
3. Wobbliness in legs.				
4. Unable to relax.				
5. Fear of the worst happening.				
6. Dizzy or lightheaded.				
7. Heart pounding or racing.				
8. Unsteady.				
9. Terrified.				
10. Nervous.				
11. Feelings of choking.				
12. Hands trembling.				
13. Shaky.				
14. Fear of losing control.				
15. Difficulty breathing.				
16. Fear of dying.				
17. Scared.				
18. Indigestion or discomfort in abdomen.				
19. Faint.				
20. Face flushed.				
21. Sweating (not due to heat).				

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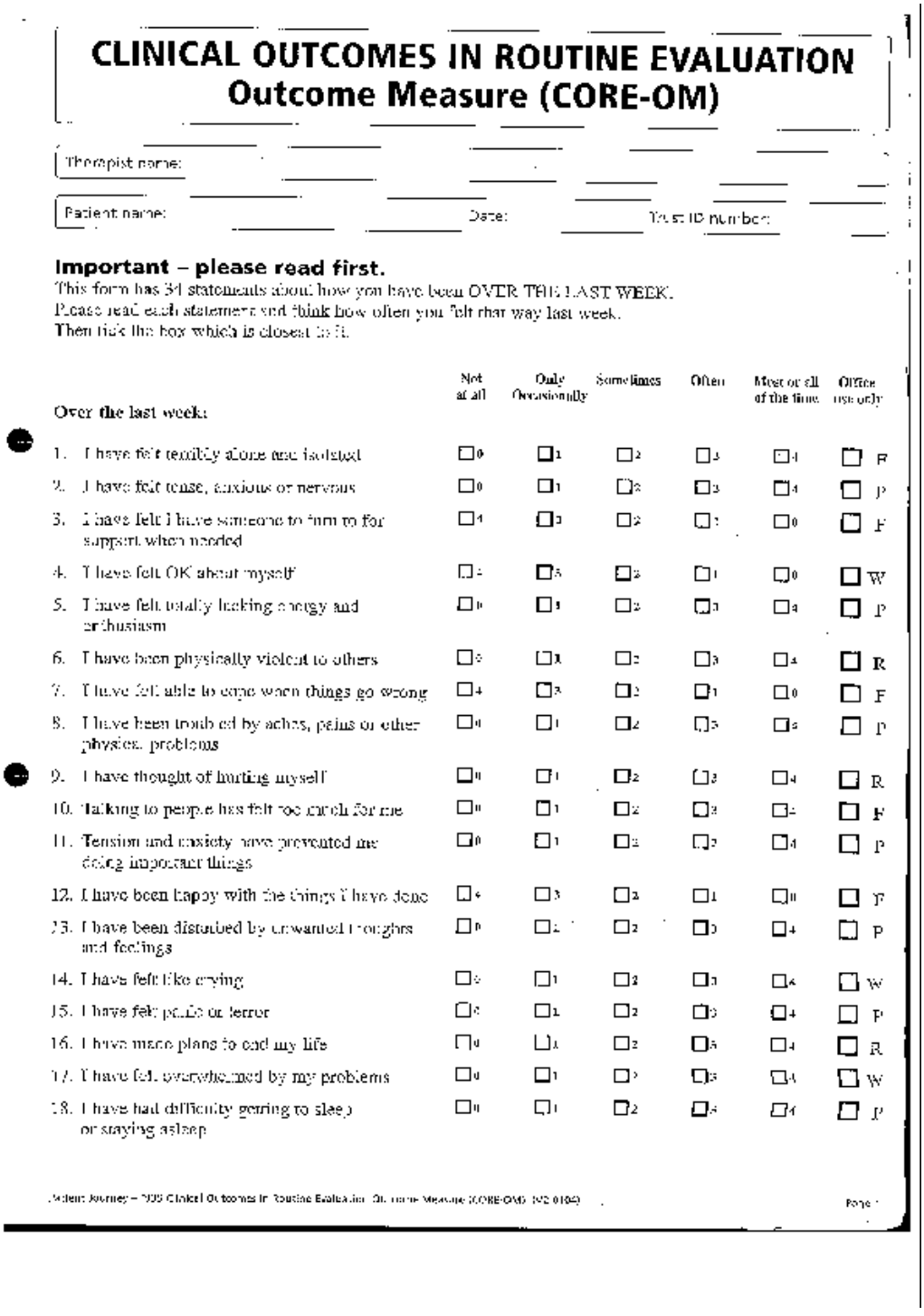
Appendix 8: CORE-OM



CLINICAL OUTCOMES IN ROUTINE EVALUATION
Outcome Measure (CORE-OM)

Therapist name: _____

Patient name: _____ Date: _____ Trust ID number: _____

Important – please read first.

This form has 34 statements about how you have been OVER THE LAST WEEK.
Please read each statement and think how often you felt that way last week.
Then tick the box which is closest to it.

Over the last week:	Not at all	Only Occasionally	Sometimes	Often	Most or all of the time	Office use only
1. I have felt terribly alone and isolated	☐0	☐1	☐2	☐3	☐4	☐ F
2. I have felt tense, anxious or nervous	☐0	☐1	☐2	☐3	☐4	☐ P
3. I have felt I have someone to turn to for support when needed	☐4	☐3	☐2	☐1	☐0	☐ F
4. I have felt OK about myself	☐4	☐3	☐2	☐1	☐0	☐ W
5. I have felt totally lacking energy and enthusiasm	☐0	☐1	☐2	☐3	☐4	☐ P
6. I have been physically violent to others	☐0	☐1	☐2	☐3	☐4	☐ R
7. I have felt able to cope when things go wrong	☐4	☐3	☐2	☐1	☐0	☐ F
8. I have been troubled by aches, pains or other physical problems	☐0	☐1	☐2	☐3	☐4	☐ P
9. I have thought of hurting myself	☐0	☐1	☐2	☐3	☐4	☐ R
10. Talking to people has felt too much for me	☐0	☐1	☐2	☐3	☐4	☐ F
11. Tension and anxiety have prevented me doing important things	☐0	☐1	☐2	☐3	☐4	☐ P
12. I have been happy with the things I have done	☐4	☐3	☐2	☐1	☐0	☐ P
13. I have been disturbed by unwanted thoughts and feelings	☐0	☐1	☐2	☐3	☐4	☐ P
14. I have felt like crying	☐0	☐1	☐2	☐3	☐4	☐ W
15. I have felt panic or terror	☐0	☐1	☐2	☐3	☐4	☐ P
16. I have made plans to end my life	☐0	☐1	☐2	☐3	☐4	☐ R
17. I have felt overwhelmed by my problems	☐0	☐1	☐2	☐3	☐4	☐ W
18. I have had difficulty getting to sleep or staying asleep	☐0	☐1	☐2	☐3	☐4	☐ P

Client Journey – CORE Clinical Outcomes in Routine Evaluation Outcome Measure (CORE-OM) (v2.0 0104) Page 1

Over the last week:	Not at all	Only Occasionally	Sometimes	Often	Most or all of the time	Office use only
19. I have felt warmth or affection for someone	☐4	☐3	☐2	☐1	☐0	☐ F
20. My problems have been impossible to put to one side	☐0	☐1	☐2	☐3	☐4	☐ P
21. I have been able to do most things I needed to	☐4	☐3	☐2	☐1	☐0	☐ F
22. I have threatened or intimidated another person	☐0	☐1	☐2	☐3	☐4	☐ R
23. I have felt despairing or hopeless	☐0	☐1	☐2	☐3	☐4	☐ P
24. I have thought it would be better if I were dead	☐0	☐1	☐2	☐3	☐4	☐ R
25. I have felt criticised by other people	☐0	☐1	☐2	☐3	☐4	☐ P
26. I have thought I have no friends	☐0	☐1	☐2	☐3	☐4	☐ P
27. I have felt unhappy	☐0	☐1	☐2	☐3	☐4	☐ P
28. Unwanted images or memories have been distressing me	☐0	☐1	☐2	☐3	☐4	☐ P
29. I have been irritable when with other people	☐0	☐1	☐2	☐3	☐4	☐ R
30. I have thought I am to blame for my problems and difficulties	☐0	☐1	☐2	☐3	☐4	☐ P
31. I have felt optimistic about my future	☐4	☐3	☐2	☐1	☐0	☐ W
32. I have achieved the things I wanted to	☐4	☐3	☐2	☐1	☐0	☐ W
33. I have felt humiliated or shamed by other people	☐0	☐1	☐2	☐3	☐4	☐ P
34. I have hurt myself physically or taken dangerous risks with my health	☐0	☐1	☐2	☐3	☐4	☐ R

THANK YOU FOR YOUR TIME IN COMPLETING THIS QUESTIONNAIRE

TOTAL SCORES	☐	☐	☐	☐	☐ →	☐
	↓	↓	↓	↓	↓	↓
MEAN SCORES (Total score for each dimension divided by number of items completed in that dimension)	☐ (W)	☐ (P)	☐ (F)	☐ (R)	☐ All items	☐ All minus R

Peters, Jeremy P. "P" Clinical Outcomes in Routine Evaluation Outcome Measure (CORE-OM) (V2-2004)